

## ABSTRACT

Title of Dissertation:       EXPLORING THE RELATIONSHIPS AMONG LIVING-  
LEARNING PROGRAMS, PEER INTERACTION,  
CRITICAL THINKING, AND CIVIC ENGAGEMENT  
ON COLLEGE STUDENT OPENNESS TO DIVERSITY

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This study uses a college impact model to examine how living-learning programs and other college environments contribute to students' perceptions of growth in openness to diversity. The study tests the Allport (1954) contact hypothesis that meaningful, equal status relationships among college students working towards common goals in the context of institutional support enhance their openness to diversity. The population is undergraduate students in 274 living-learning programs in 34 universities, representing a broad range of programs and universities. Openness to diversity is defined as the awareness and appreciation of other ideas and values, and of racial and cultural differences.

The Residence Environment Survey of the National Study of Living-Learning Programs is used to understand how living-learning programs contribute to 12, 241 students' openness to diversity from several different perspectives, by examining differences in students' perceptions by (a) thematic types of living-learning programs, (b)

structural elements of living-learning programs, and (c) involvement in living-learning programs nested within a comprehensive conceptual model of college impact on openness to diversity. The study uses mean differences, cluster analyses, and multiple regression analyses to examine openness to diversity from these perspectives.

The study determines that students in upper-division living-learning programs have higher perceived growth in openness to diversity than students in most other program types on openness to diversity. The cluster solution distinguishes among the groups of living-learning programs, but there are no mean differences in openness to diversity among the cluster types. Hierarchical multiple linear regression analysis indicates several items successfully contribute to the model for openness to diversity. They include gender; standardized test scores (negative relationship); socially supportive residence halls; majors in applied social sciences; class level; peer interaction; undergraduate students as mentors in living-learning programs; multicultural programming in living-learning programs, critical thinking; and civic engagement.

The primary implication is that student affairs and higher education professionals contribute to student learning by creating environments that are conducive to positive, meaningful interaction among diverse peers. Resources should be allocated to facilitate meaningful, purposeful peer interaction in living-learning environments primarily during the first two years of college.

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PEER INTERACTION, CRITICAL THINKING, AND CIVIC ENGAGEMENT  
ON COLLEGE STUDENT OPENNESS TO DIVERSITY

by

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## Chapter 1: Problem and Context

Several important yet distinct themes within the study of the impact of college on students have emerged over the past few decades. These include: the role of a positive climate for racial/ethnic diversity on college campuses in facilitating student learning and growth, the impact of living-learning programs on intellectual development, the importance of peer interaction to intellectual development, and the relationship between civic engagement and student learning through awareness of diverse perspectives. While each of these topics has advanced our understanding of their salience in the higher education literature, they have been developed along largely separate lines. Yet, they appear to share much in common. For example, living-learning programs foster heightened student learning and development, primarily through peer interaction (Inkelas & Weisman, 2003; Pike, 1999), and current research (Gurin, 1999, 2002; Hurtado et al., 1999) asserts that racial/ethnic diversity on college campuses also facilitates augmented learning and development. Moreover, if involvement in civic engagement activities increases students' awareness and understanding of diverse perspectives (Jones & Hill, 2001; Jones & Abes, 2004; Vogelgesang & Astin, 2000; Youniss & Yates, 1997), then it would stand to reason that civic engagement, racial/ethnic diversity, peer interaction, and student learning and development are also inter-related. This study seeks to fuse these separate lines of inquiry into one study, using a college impact model as its overarching framework.

Over the past 50 years, higher education researchers have studied the influence of college on student outcomes through college impact theories and models. Several theories about the impact of college have been developed and empirically tested (Astin, 1991;

Newcomb, 1962; Weidman, 1989). The similarities among the theories are in their common adherence to the study of the college environment impact on student outcomes, in combination with the inclusion in the models of the background characteristics that students bring with them to college. Some of them also include the impact of environments not directly related to college that continue to have an impact on students' experience while in college, such as churches and families (Weidman, 1989).

One of the most well-known and widely-used college impact models was developed by Alexander Astin. In the Astin (1993) Inputs–Environments–Outcomes (IEO) college impact model, used in this study, student outcomes are the result of two major groups of influences: student background characteristics, or “inputs,” and college experiences, or “environments.” The central feature of the Astin conceptualization is the use of statistical controls to measure outcomes. It can be argued that the greatest research risk in measuring the impact of college is to overestimate the effects of any one influence on student outcomes without understanding the effects of other, confounding, influences. To guard against this error, the research must control for as many confounding variables as possible. The Astin conceptual model controls both “inputs” and competing “environments” to estimate the effect of any single environment on an outcome.

This study follows an Astin IEO model, assessing the relationship of several student inputs and college environments—most notably participation in living-learning programs, peer interaction, activities encouraging critical thinking skills, and involvement in civic engagement endeavors—with the outcome of openness to diversity. Thus, this study seeks to combine elements of previously distinct sets of research topics together

into one inquiry. This study brings these disparate themes together by studying students who are participants in living-learning programs.

Living-learning environments are the focus of scrutiny in this study of the college environments that contribute to student growth and learning. These programs are the focus because they represent coherent environments that can integrate all environmental effects in this study into one type of programming. Living-learning programs represent a potential opportunity to bring together heightened peer interaction, positive racial and residence hall climates, and activities that encourage critical thinking and civic engagement into one overarching programmatic effort. Studying living-learning programs holds promise for contributing to the research on college student learning and development, and for contributing to knowledge that can be applied to higher education practice.

This chapter opens with a brief overview of the significant role that diversity and civic engagement has played in American higher education's past, present, and future. The following section describes various facets of the college environment that have been empirically linked to student learning and development, including a greater openness to diversity. The chapter continues with a description and summary of living-learning programs, including how living-learning goals may relate to developmental goals such as openness to diversity. Finally, the chapter concludes with the theoretical foundation, a statement of the research question, the significance of this question for research and practice, and the limitations of this study.

### *Diversity in Higher Education*

United States higher education since the early 19th century has cherished free and open inquiry, and the unprejudiced examination of values (Goodchild & Wechsler, 1997). From the first democratic universities, United States campuses have valued free thought and the democratic pursuit of truth. At the beginning of the nineteenth century, United States universities were becoming less exclusive and less religiously based, and more focused upon preparing citizens for a democratic nation (Goodchild & Wechsler; Rudolph, 1990). A healthy democracy demanded wider access so that more citizens would be prepared to contribute to its development and maintenance. For instance, as early as 1833, Oberlin College was established with a charter statement to open its doors to all seeking to be educated. Its values were made explicit in a faculty statement of “the hearty recognition of equal human rights as belonging to all...the cultivation of moral feelings is the first object in education.” (Goodchild & Wechsler, p. xxv).

### *History of Diversity in Higher Education*

Despite the lofty aspirations set forth by Oberlin, United States higher education has at times failed to live up to its democratic ideals. Many persons in the United States, for various reasons, did not have access to higher education until the middle of the 20<sup>th</sup> century (Goodchild & Wechsler, 1997; Thelin, 2004). All but wealthy White male protestants were excluded from higher education during the first two hundred years of the colonization of North America; in the following hundred years (from the mid nineteenth to the mid twentieth centuries), various exclusions continued. These exclusions extended to women, and most ethnic groups (Goodchild & Wechsler; Thelin). Many universities created quotas for Jewish students in the 1920s and 1930s. The quotas severely restricted

the numbers of Jewish students who could attend universities. Women were excluded from many of the most prestigious undergraduate institutions, and were widely excluded in graduate programs (Goodchild & Wechsler; Rudolph, 1990). Separate segregated campuses were created for African American and Native American students (Goodchild & Wechsler; Rudolph). And, it was not until the vast expansion in institutions of higher education enabled by the Morrill Act and the GI bill that large numbers of White middle class Americans had access to colleges and universities. In 1954, the Supreme Court *Brown v. Board of Education* decision, followed by the Civil Rights Movement, finally gave African Americans, Asian Americans, Native Americans, and Latino Americans access to predominantly White colleges and universities.

#### *Contemporary Diversity in Higher Education*

Today, most college and university mission statements emphasize the importance of diversity in fulfilling their educational goals. These statements speak to the importance of openness and tolerance as important aspects of a strong and vibrant learning community, and important elements of an undergraduate education (Campus Compact, 2000; Gurin, 1999, 2002; Witt, Chang, & Hakuta, 2003). They often further elaborate that a positive campus climate for diversity contributes to the goal of a healthy democratic society. These mission statements are designed to inform the campus community that the presence and participation of students, faculty, and staff of all racial and cultural groups are valued, and are an important aspect of the institution's mission.

Meanwhile, campuses have become much more racially and ethnically diverse in the past 40 years, and they will continue to do so in the coming decades. From 1990 to 1999, undergraduate enrollment of students of color at United States colleges and



universities increased by 45.9 %, and from 20.6 % to 28.4 % of the total enrollment (Harvey, 2002). By 2010, students of color will make up nearly a quarter of the population of U.S. residents 18 and under (Hurtado, Milem, Clayton-Pedersen, & Allen, 1999). In order for the U.S. economy to remain viable, institutions of higher education must provide educational environments of success for students of color (Hurtado et al., 1999).

This dramatic rise in diversity has generated much conversation and controversy. There have been arguments about the core curriculum, and whether it should be predominantly composed of knowledge and writings of European origin (Pratt, 1992). There have been serious discussions about hate speech versus free speech, partially in response to hate crimes on campuses (Boyer, 1990a). Finally, amid increasing demands from students and faculty to more aggressively hire and promote faculty of color and recruit more students of color, some have challenged the use of affirmative action in higher education (Witt, Chang, & Hakuta, 2003).

Two recent Supreme Court cases upheld the use of affirmative action in university admissions for at least the next 25 years (*Gratz v. Bollinger*, 2003; *Grutter v. Bollinger*, 2003). The Supreme Court cases that were heard with respect to the University of Michigan's affirmative action policies were decided in favor of the University when it was determined that the university's "compelling interest" was served through the enrollment of greater numbers of students of color. The compelling interest argument is that universities must continue affirmative action programs because they are necessary to recruit a racially diverse student body; and, this student body composition represents a

diversity of perspective, which furthers the goals of student learning, a core mission of universities.

Through the compelling interest argument, a racially diverse student body promotes student learning by challenging students' patterns of thinking and by encouraging them to understand issues from multiple perspectives. According to cognitive-developmental theorist Piaget, cognitive growth occurs through dissonance, the basic challenge of one's core beliefs (Piaget, 1977).

Developing sufficient dissonance is not a simple matter. Dissonance occurs when automatic thinking is upset, and this only occurs when the environment demands new ways of approaching problems. These new approaches are necessary because dissonance creates the need to establish a new equilibrium, and equilibrium is essential to a coherent sense of self. The achievement of equilibrium requires assimilation of new information and then accommodation of new structures of thought. The environment must be challenging enough that it contains situations in which students fail to fit challenging stimuli into their established patterns of thought. Failure to fit stimuli into established patterns encourages new ways of looking at old patterns and new approaches to problem solving and making sense of the world. The continual search for equilibrium is a fundamental contributor to cognitive growth. The challenge of equilibrium is the search for growth in coherence (Piaget).

Further, this challenge occurs at a critical time in an undergraduate student's life. Students at the traditional undergraduate age, during late adolescence, are developmentally primed to seek new perspectives and challenge old ways of thinking. Erikson (1968) discovered the importance of late adolescence to developing a strong and

unique sense of identity, a coherent sense of self. He found that humans in late adolescence benefit from time away from childhood influences. This time allows them to form their own identities, and to explore different life perspectives. This time of exploration is ideal for the development of critical thinking skills and differing perspectives. Thus, the match between maturational position and college attendance is a golden opportunity for universities.

The importance of learning diverse perspectives in college is particularly salient not only because the timing is right for students to learn during the undergraduate years, but also because once students attain new perspectives, these attitudes are likely to remain with them throughout their lives. In a longitudinal study conducted at 10, 25, and 50 years after graduation, Newcomb and colleagues found that social and political attitudes that developed in college in a group of women remained stable into their seventies (Alwin, Cohen, & Newcomb, 1991).

### *The Civic Mission of Higher Education*

Just as student learning is a critical aspect of every institution's mission, another core mission for most institutions that is affected by a diverse environment is the goal of contributing to the larger democratic society. Since the beginning of the United States college experiment, contributing to a strong democracy has been a primary goal of American colleges (Rudolph, 1990; Vine, 1997). Since the American Revolution, persons in the United States widely believed that colleges and universities were responsible for preparing people for citizenship in the new nation. "The American people were conducting an experiment in free government of a nature and scope that the world had not yet known. The American college intended to serve that mission" (Rudolph, p. 61).

More recent statements from leaders in higher education have reaffirmed the civic mission of colleges and universities, and the importance of a college education to enhancing civic engagement (Astin & Astin, 2000; Campus Compact, 2000; Edgerton, 1999; Sullivan, 2000; Wingspread, 1993).

A college education encourages students to participate in a pluralistic society by becoming engaged and active citizens. Civically engaged students have an increased ability to appreciate the diversity of opinions that occurs in a heterogeneous society (Astin & Astin, 2000; Bowen & Bok, 1998; Gurin, 1999; Milem, 2003). Through engaging with diverse peers, students develop perspectives and attitudes that enable them to continue to engage with diverse others as citizens in a democratic nation. Because of the importance of civic engagement to student learning and the higher education mission, higher education leaders have advocated that educators take responsibility for the development of citizens (Boyer, 1998). It is through educating citizens that higher education both shapes and is shaped by society.

### *Defining Openness to Diversity*

In order for students to fully gain cognitively and civically from the effects of a diverse environment, they must be open to and accepting of diverse perspectives. If students look forward to hearing diverse perspectives, they more likely will seek them out and seek to learn from them (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996). Awareness alone is insufficient; an attitude of appreciation of difference must be present to maximize the benefit of diversity (Chickering & Reisser, 1993). The attitude of openness to diversity encompasses not only the understanding that diversity exists, but also the ability to appreciate its presence and seek out its offerings. Openness to diversity

is defined in this study as the awareness and appreciation of differences in values, races, and cultures. Diversity thus refers to differences in values, and to differences in race and culture.

Openness to diverse perspectives cannot necessarily be assumed for all people. Sociological studies of human prejudice have indicated that attitudes change more slowly than beliefs (Allport, 1954). Openness to diversity is an attitude. “An attitude represents an organization of interrelated beliefs that are all focused on a specific object or situation” (Rokeach, 1971, p. 453). Openness (interrelated beliefs) is an orientation towards diversity (the specific situation). For example, while students’ beliefs may change through exposure to diverse peers, it is attitudes (a cluster of those beliefs oriented toward diversity in general) that are most intransigent to change.

Because attitudes are difficult to change (Allport, 1954), the achievement of greater openness to diversity represents a significant milestone in student growth and learning. Gaining this attitude provides students with greater receptivity to the diversity of perspectives in their college environment. It is hypothesized that this openness is an important precursor to maximizing the learning that occurs in a diverse academic environment. It is therefore useful to inquire into the college environmental factors that facilitate growth in openness to diversity.

#### *The Influence of College Environments on Student Learning and Development*

Although it is important to encourage the development of critical thinking, democratic citizenship, and multiple perspectives through a diverse college environment, the environment also can be shaped in ways that best take advantage of that diversity. Campus environments can be intentionally structured for learning.

There are several aspects of the college environment that have been shown to facilitate learning. Comprehensive studies of student learning and development outcomes indicate that peers are the single greatest source of college impact (Astin, 1993). Structured learning environments can be designed both in and out of the classroom and those learning environments can be designed for interaction among diverse peers (Gurin, 1999; King & Kitchener, 1994). Environments designed for interactions among diverse peers foster growth in reflective thinking; this interaction among diverse peers has been empirically linked to cognitive development (Gurin). In a report compiled for the Michigan Supreme Court cases, Gurin studied the learning outcomes of both classroom and informal peer interactions. She found that diverse peer interactions affected student learning through growth in active thinking, perspective taking, and understanding of conflict.

The formal curriculum related to diversity interactions can have an impact on student learning. In a study of the effects of a multicultural approach to teaching human development, students developed in both their openness to diversity and their critical thinking skills (MacPhee, Kreutzer, & Fritz, 1994). An important element of the diversity curriculum was working in small groups on case studies in a cooperative learning environment. In a qualitative analysis section of this mixed-methods study, researchers found that students increased in their application of theory, drawing inference from data, and critically evaluating evidence (MacPhee, et al.).

#### *The Campus Racial Climate as a College Environment*

Scholars in higher education and student affairs have noted the lack of civility on college campuses, and have expressed the need for a better climate for diversity (Boyer,

1990a, 1990b, 1998; Levine & Cureton, 1998; National Association of State University and Land Grant Colleges, 1997; Wingspread, 1993). Campus climates have gained attention as researchers have noted that climate has a significant effect on student learning. Student success is enhanced when there is a positive climate for diversity (Hurtado, 1992). It is the presence of incivility and its impact on student learning that highlights the importance of campus climate studies.

Hurtado and colleagues (1999) created a framework for assessing the campus racial climate. The framework includes the campus' historical legacy, structural diversity, psychological climate, and behavioral climate. Historical legacy refers to each campus' unique history with respect to diversity. Structural diversity is the current demographic participation of individuals from various racial and ethnic groups. Psychological climate refers to perceptions and attitudes between and among groups, and behavioral climate refers to relations among groups. Each of these elements is a significant contributor to the overall racial climate (Hurtado et al.).

One college environment in particular, though, that can combine elements of the formal curriculum, informal peer interactions, and enhanced racial climate in one intervention is the living-learning program.

#### *Living-Learning Program Environments*

Living-learning programs are an environmental intervention that has gained increasing attention in recent years (Inkelas & Weisman, 2003; Lenning & Ebbers, 1999; Pike, 1999; Shapiro & Levine, 1999; Stassen, 2003). Shapiro and Levine define living-learning programs as residence environments that provide a coordinated academic experience as a part of the living environment (Shapiro & Levine, 1999). Living-learning

programs were designed to increase interactions among peers and faculty and to connect the experiences of the curriculum and the co-curriculum (Lenning & Ebbers, 1999).

One of the earliest living-learning programs was established in 1929 at the University of Wisconsin. Founder Alexander Meiklejohn (1932), an educator at the University of Wisconsin, wanted to create a stronger democracy, and he had a vision to create more intelligent students as a mechanism to achieve it. Meiklejohn defined intelligence as the accumulation of wisdom gained through reading broadly and pursuing a liberal arts education. Like many programs now, the living-learning program he created was focused on the first two years of college. Meiklejohn's opinion, through his descriptive work, was that students became more committed to a democratic society through their participation in the experimental college. For example, he observed that relationships between diverse students (in this case, Jew and Gentile) slowly improved through increased interaction. Students spoke eloquently long after they had left the program on the profound influence the program had on their thinking (Meiklejohn). The Meiklejohn experience illustrates that the premise of living-learning programs as a conduit for diversity appreciation and intellectual growth has historical roots. Despite these roots, it is not known what programmatic elements of living-learning programs enhance openness to diversity, because there has been no research on the specific elements of living-learning programs that support attitudinal change such as growth in openness to diversity.

Research consistently shows that living-learning programs enhance peer interaction (Inkelas, 1999; Inkelas & Weisman, 2003; Inkelas, Brower, Crawford, Dunn, Hummel, & Zeller, 2003; Pike, 1999, 2002), and peer interaction can lead to meaningful



interaction among peers, which has a strong relationship to attitudinal growth and change. Participation in living-learning programs does not necessarily predict positive changes in student attitudes (Inkelas, 1999). However, if living-learning programs have specific elements that encourage increased peer interaction (such as they did in the Meiklejohn experimental college), they may indirectly through peer interaction enhance attitudinal change. And the use of peer groups in living-learning programs promises the most potential for gains in student outcomes.

In fact, in a meta-analysis on student outcomes of college attendance, the impact of living-learning programs on student outcomes are predominantly indirect, through their ability to increase interaction with peers (Pascarella & Terenzini, 1991). Pike (1999), for example, found that students in living-learning programs experience cognitive growth, but only as an indirect effect of greater peer interaction. Another general outcome that studies of living-learning programs have found is that students who participate in them experience a more supportive peer environment than do those in traditional residence halls (Brower, 1997; Lacy, 1978; Newcomb, 1962; Pascarella & Terenzini, 1991). The experience of a supportive peer environment is linked to positive intellectual and social outcomes for college students (Pascarella & Terenzini).

*Thematic types of living-learning programs.*

There are hundreds of living-learning programs in existence on campuses around the country, and they take many different forms. One recent study, the National Study of Living-Learning Programs (NSLLP), included over 250 living-learning programs at 34 institutions. Using this data, the researchers for this study categorized the different living-learning programs into a thematic typology by conducting a content analysis of program

titles and descriptions provided by the programs themselves (Inkelas, Brower, Crawford, Hummel, Pope, & Zeller, 2004). The types identified in the thematic typology included Civic/Social Leadership, Cultural, Disciplinary, Fine and Creative Arts, General Academic, Honors, Multidisciplinary, Outdoor Recreation, Research, Residential College, Transition, Upper Division, Wellness, and Women's (Inkelas et al., 2004). Although this categorization is based upon a content analysis only, delineating living-learning programs by theme is a step to understanding the differences in student outcomes among different types of programs. Another way to capture differences in living-learning impact is through understanding how different structural elements of living-learning programs influence student outcomes.

*Structural types of living-learning programs.*

In addition to the thematic variations among living-learning programs, there are structural elements that distinguish living-learning programs from one another (Inkelas & Weisman, 2003). For example, the size of programs varies, as well as the reporting and budgeting organization. The influence and roles of peers, faculty, and student affairs administrators varies across programs. Finally, programs differ in the degree to which they require or offer activities such as courses, advising, multicultural programming, study groups, and service learning. This study explores living-learning programs thoroughly by examining their structural elements.

Structural elements of living-learning programs are examined for two reasons: (a) to create an empirical typology of living-learning programs (using cluster analysis); and (b) to determine what elements of living-learning programs contribute to growth in openness to diversity (using multiple linear regression). This study uses these two

analyses of living-learning program structural elements to determine the relationship of living-learning programs with student openness to diversity. It is important to measure students' openness to diversity outcomes related to participation in living-learning programs so that colleges and universities can determine the degree to which these programs are contributing to the core learning mission of higher education.

### *Major Theoretical Foundation*

This study examines the environmental factors that influence the development of openness to diversity in college students. Specific aspects of the college environment, particularly living-learning programs, will be examined for their contribution to openness to diversity. Not only is there little research on openness to diversity, there is even less research on the contributions of various aspects of the college environment to openness to diversity. In addition to using the Astin (1993) IEO model as a framework, this study uses the Allport (1954) contact hypothesis as its theoretical foundation to study environmental influences on the development of student openness to diversity.

Understanding the environmental factors that facilitate students' openness to diversity can be framed through the lens of Gordon Allport's (1954) contact hypothesis. Allport developed the contact hypothesis in 1954, which states that racial prejudice is a consequence of social ignorance that can be ameliorated through constructive interaction with others from different racial/ethnic backgrounds. Allport defines prejudice as an attitude (usually unfavorable) toward a group of people that is not based upon actual experience. In this sense, prejudice forecloses knowledge acquisition, and is the opposite of the openness definition, which is based upon the willingness (even eagerness) to obtain knowledge from and about others. Although the reduction of prejudice and the

enhancement of openness are not exactly synonymous, prejudice and openness are both attitudinal, and one precludes the other; essentially, they are opposites.

This study draws upon the contact hypothesis as its theoretical foundation. After years of sociological research, Allport (1954) asserted that people lessen their prejudice in four primary ways: when they are in equal status relationships, when there are meaningful relationships, when those relationships are institutionally sanctioned, and when participants have common goals and values.

This study combines the tenets of the contact hypothesis (Allport, 1954) with an Astin IEO model conceptual framework to examine college environmental influences on students' growth in openness to diversity. The variables in this study emphasize the basic elements of Allport's contact hypothesis, including the relationships of diverse, equal status, and meaningful peer interaction in a climate of institutional support. In addition, this study focuses on a specific facet of the college environment hypothesized to contribute to student learning and openness to diverse perspective-taking: involvement in living-learning programs.

### *Purpose Statement and Research Questions*

#### *Purpose Statement*

This study uses a college impact model to examine how living-learning programs and other college environments contribute to students' perceptions of growth in openness to diversity. The study tests the contact hypothesis that meaningful, equal status relationships among college students working towards common goals in the context of institutional support enhance their openness to diversity. The population is undergraduate students in living-learning programs in a broad range of university settings. Openness to

diversity is defined as the awareness and appreciation of other ideas and values, and of racial and cultural differences.

### *Research Questions*

This study investigates the following three research questions:

1. Are there differences in openness to diversity among students who participate in different thematic types of living-learning programs?
2. Do various structural elements of living-learning programs tend to cluster together to form distinct types of living-learning programs? If so, do students in different clusters of living-learning programs have different levels of openness to diversity?
3. Using the conceptual framework developed for this study, how do student background characteristics, living-learning program involvement, peer interaction, involvement in critical thinking and civic engagement activities, and participation in other college environments contribute to students' openness to diversity?

### *Scope and Limitations of the Study*

There are several limitations to this study. Responses to the survey questions are self-reported, so may be limited by student effort to answer in socially desirable ways. For example, students may indicate they have grown in their ability to get along with people different from themselves, because that is the socially desirable response. The various methodologies used in this study are not able to describe causal relationships, and are limited by variables the researcher chooses to include. For this reason, the methods must rely upon the literature to determine variables to include in the model. There are several analyses used in this study. Therefore, there is some threat that significant results

may in fact be false findings; specifically, there is the possibility of a Type I error. However, effort was made to limit the inclusion of variables that did not already exhibit a justification for inclusion based upon prior literature. Finally, this study examines students' growth in openness to diversity. However, the contact hypothesis is a test of a theoretical model for reduction in prejudice. This study assumes that those who have more openness to diversity have a reduction in prejudice. Although this research study is essentially the opposite of the proposition of the contact hypothesis, this approach is consistent with prior research. Most researchers who have tested the contact hypothesis have used a proxy measure for reduction in prejudice, such as harmony in relationships, harmonious intergroup relations, or reduction in bias (Dixon & Durrheim, 2003; Gaertner, Dovidio, Nier, Ward, & Banker, 1999; Herek & Capitanio, 1995; Wilson, 1996).

### *Significance of the Study*

Despite these limitations, the results of this study will contribute to the literature in several ways. Most significantly, because there are a large and diverse range of colleges and universities, living-learning programs, and students in the sample, the study represents a broad portrait of students who participate in living-learning programs across the United States. There are 274 living-learning programs on 34 campuses in the study, at both masters comprehensive and research extensive universities, in all major geographic regions of the United States. Thus, the sample allows for a multi-institutional test of the contact hypothesis.

This study will add to the empirical research on the diversity outcomes of living-learning programs, and particularly the influence of environmental variables such as

living-learning programs, peer interaction, faculty interaction, critical thinking, campus racial climate, residence hall climate, and civic engagement on growth in openness to diversity. The results of this study will add to the college impact literature on the environmental sources of student attitudinal change.

This study will add to the knowledge about whether and which campus environmental elements contribute to a diversity outcome. This study is focused on one outcome, openness to diversity. Although living-learning programs have been studied with respect to their contribution to student achievement and satisfaction, little research has been done on the contribution of living-learning programs to diversity outcomes (Inkelas & Weisman, 2003). Many different aspects of living-learning program environments will be examined to determine their relationship to openness to diversity. This study will explore whether there are some aspects of living-learning programming that contribute in unique ways to growth in openness to diversity.

The study will add to the research knowledge of how specific cluster types of living-learning programs, and their structural elements, contribute to greater openness to diversity. A cluster typology of living-learning programs will be empirically developed in this study. Living-learning typologies have not been empirically developed in previous research. A greater understanding of program types can lead to a delineation of best program practices. These “best practices” can assist campus administrators in the design of effective living-learning programs. Program administrators will gain assessment standards to use and apply for program evaluation. For example, if the specific target is a better residence hall climate for diversity, then a blueprint for growth in openness to diversity could act as a tool for design and assessment of these programs. Similarly, if the

specific goal is students' learning and development, then a blueprint for growth in openness to diversity could also facilitate the design of living-learning programs for learning and development outcomes. A cluster typology will benefit administrators in designing programs by giving them landmarks with which to identify various structural elements of programs and the openness to diversity outcome. A cluster typology will also provide a common language for all who work with and study living-learning programs.

Further, a cluster typology will enable researchers to begin to assess program outcomes across living-learning programs nationally. Standards will also allow researchers to study outcomes across programs, and to begin to build a body of literature on living-learning programs by type of program and type of outcome. Although each type of program may have a different stated mission, it is logical that they should be evaluated based upon their achievement of those unique goals. Not all programs will contribute equally to all outcomes, nor should this be an expectation.

It will also be possible through this study to determine whether specific environmental elements, (such as roles of undergraduates and programming), contribute to perceptions of growth in openness to diversity. This knowledge will be particularly useful in educational environments that may not have access to the resources necessary to implement living-learning programs. Community colleges and small private colleges may use the findings of this research to design programs that will optimize an environment for contributing to student growth in openness to diversity without having to create comprehensive living-learning programs.

Residence hall and other student affairs administrators will be able to use this research to heighten the effects of their co-curricular programming. The findings in this



study will provide a tool for administrators to enhance environments to support student growth. This knowledge will enable administrators to further tie their goals to the overall institutional goals of student learning, and give them the potential to increase their collaboration with academic faculty in programs designed to contribute to students' cognitive and psychosocial development.

The enhancement of individual openness to diversity has implications for improving the overall campus climate for diversity (Hurtado et al., 1999). If it is possible to identify and isolate the environmental elements that influence growth in openness to diversity, then institutions can design programs to be better equipped to educate citizens for participation in a strong democracy (Colby, Ehrlich, Beaumont, & Stephens, 2003). When campuses have prepared the way for students to learn from the structural diversity within them, the resulting attitudinal readiness of students can be drawn upon through further curricular and co-curricular designs that will continually strengthen the environment for open inquiry, appreciation of multiple perspectives, and the expectation of ongoing citizen contribution in a pluralistic, democratic society.

The next chapter reviews in more detail the contact hypothesis and studies using this hypothesis as a conceptual frame. The chapter then reviews research related to the major background characteristics and environmental variables included in this study's conceptual framework.

## Chapter 2: Review of the Literature

The review of the literature begins with a discussion of this study's core foundation, the contact hypothesis, and incorporates an analysis of recent research using this foundation. This discussion is followed by a review of the three conceptual models used to test the contact hypothesis. This is followed by a review of research on the study's outcome measure, openness to diversity, and the various predictors of this outcome identified by the literature. Finally, this chapter summarizes the limitations of the research in all of these areas.

### *Major Theoretical Foundation*

The foundational theory for this study is Allport's (1954) contact hypothesis, which states that, under certain environmental conditions, interaction among individuals of different races can reduce prejudice. Those specific environmental conditions include: equal status and meaningful relationships, common goals, and institutional support (Allport). Equal status relationships are those that are not hierarchical (e.g., a relationship between college peers). Meaningful relationships are those that provide value to the members. Common goals refers to members working together on mutually common interests. Institutional support refers to the support of local laws or culture, or other societal structures. These four conditions can have the effect of changing attitudes.

The contact hypothesis is concerned with a change in attitudes, as distinguished from beliefs (Allport 1954). According to Allport, attitudes are much more difficult to change than beliefs. If a person is hateful toward a group, changes in beliefs are not likely to change that attitude. For example, if one hates a group of people because they are believed to be lazy, and one is confronted with information that illustrates the group of

people are not lazy, one is likely to change the belief (e.g., members of the group are dirty instead), but still hold onto the attitude of hatred. Beliefs are vulnerable to rationalizations, whereas attitudes are more resistant to change.

Allport (1954) defined individuals' sense of affiliation as references to ingroups and outgroups. Ingroups are "broadly defined as any cluster of people who can use the term "we" with the same significance" (Allport, p. 37). An individual may have many ingroups, and they may change with the changing context of their lives. Some ingroups are ascribed, and others are achieved. For example, a person may be an ingroup member of a nation, a family, a school, and a community organization. The ultimate ingroup is all of humanity. The outgroup is composed of all who are not perceived to be members of the ingroup.

The context for the Allport (1954) studies was the segregated social milieu of the U.S. in the 1950's, when equal status and meaningful relationships, institutional support, and common goals across racial groups were rare. This lends credence to how and why attitudinal change became the focus of Allport's studies. The studies found that members had to have equal societal status, whether as employees or as students, in order for prejudice to lessen (in some cases, the minority group member had higher status, which also served to reduce the prejudice of the majority group member; however, this was not the case if the roles were reversed).

Allport's (1954) influential work on discrimination is based upon a summary of research studies that examined the effects of various kinds of contact on prejudicial attitudes. A series of studies on intercultural education examined the effect of educational travel on the participants and their level of prejudice; other studies on residential living

examined the effect of living in close proximity on people's prejudice. Finally, Allport looked at a series of studies on occupational contact and prejudice. In each of these clusters of studies, several variables on type of contact were examined. They included the frequency and duration of contact, the status of participants, the roles of the participants (i.e. competitive or cooperative), and the authenticity of the contact. Based upon these studies, Allport summarized his hypothesis as follows:

Prejudice (unless deeply rooted in the character structure of the individual) may be reduced by equal status contact between majority and minority groups in the pursuit of common goals. The effect is greatly enhanced if this contact is sanctioned by institutional supports (i.e. by law, custom or local atmosphere), and provided it is of a sort that leads to the perception of common interests and common humanity between members of the two groups. (Allport, 1954, p. 281)

One of the most prolific researchers of the contact hypothesis is Thomas Pettigrew. In a recent tribute to Allport's (1954) work, Pettigrew (1999) noted that the contact hypothesis has provided the framework for over four decades of social psychological research on prejudice, making Allport's contribution to the study of prejudice highly influential in the social sciences.

Pettigrew (1998) summarized the research on the contact hypothesis in a meta-analysis. There are three predominant lines of research that have tested and refined the hypothesis. The first line of research looked for other environmental factors of the contact hypothesis; aside from one proposed new element, described below, the newly identified factors are more facilitative than essential. Therefore, the original four elements of the contact hypothesis remain.

The second line of research on the contact hypothesis examined the process of prejudice reduction. Identified processes included learning more about the outgroup, changing behavior, developing affective ties with the outgroup, and a reappraisal of the outgroup by the ingroup. Each of these process elements was facilitated through cross group friendships. The weakness of these cross-sectional process studies on the contact hypothesis is that they did not capture the cause and effect of contact, due to selection bias—prejudiced people tend to avoid contact, and less prejudiced people tend to seek contact across groups. To counter the problem of selection bias, Pettigrew (1998) added an element to his research called “friendship potential” and found that the friendship effect was greater than the selection bias. Friendship potential is the possibility of close, sustained interaction among people through repeated contact across a variety of social contexts. As a result of his findings, Pettigrew added the fifth condition to the contact hypothesis: The contact situation must provide the participants with the opportunity to become friends.

Third, studies showed that reduction in prejudice does not necessarily generalize to others of the same group, or to other groups. Amir (1969) recognized early the problem of generalization. He confirmed, through a review of research, that very specific conditions of contact must be present for the hypothesis to generalize and for ethnic tension to dissipate. He found that contact with specific individuals in a group did not always generalize to people in the group as a whole. If contact experiences did not generalize, then contact did not predict a lessening of prejudice (Amir).

Gaertner and colleagues (1999) have more recently studied the problem of generalization. They found three kinds of generalization. In situational generalization,

contact generalized across situations, so that prejudice toward an outgroup member lessened regardless of the situational context of the contact. In individual to group generalization, contact generalized from an individual in the outgroup to all members of the outgroup. Lastly, the broadest form of generalization occurred from one outgroup to all those outgroups uninvolved in the contact situation (Gaertner, Dovidio, Nier, Ward, & Banker).

Gaertner and colleagues (1999) found that the process of generalization required the formation of a new group identity. Gaertner called this new group the superordinate group, defined as formerly disparate groups combined into a common group identified by a shared goal or value. In three separate Gaertner field studies, when a superordinate group was formed, the conditions of contact reliably predicted harmony and the absence of bias. The studies surveyed 1,353 high school students, 229 bank executives, and 86 college students. In each study, a path analysis showed that contact predicted group harmony, both directly as well as indirectly through the perception of one superordinate group. In addition, the more favorable the conditions of the contact, the more the participants felt the group was superordinate (Gaertner, et al.).

As a result of these studies, Gaertner and colleagues (1999) developed a refinement of the contact hypothesis. Allport (1954) stated that pro-ingroup bias is inherent in humans. Therefore, in order to reduce prejudice, people must see both the ingroup and outgroup as a new, superordinate ingroup. Then, ingroup members will have more positive thoughts, feelings, and behavior toward former outgroup members. Under these favorable conditions of contact, the contact hypothesis generalizes and reliably predicts intergroup harmony and a reduction of prejudice.

Other research confirms the necessity of each environmental element of the contact hypothesis, by showing the failure to reduce prejudice in the absence of some elements (Dixon & Durrheim, 2003; Herek & Capitanio, 1995). Dixon and Durrheim cautioned about the difficulty of testing the contact hypothesis in predicting a reduction in prejudice, given that many who are prejudiced avoid contact, and so do not have the opportunity to develop the kinds of relationships that lead to a reduction in prejudice. In a study on the social interactions of White and Black people on South African beaches, the researchers found that people had a myriad of mechanisms to avoid one another, despite being in close physical surroundings (Dixon & Durrheim). In other words, the element of willing contact must be present in order for prejudice reduction to occur. In another study on Black heterosexual attitudes toward lesbians and gay men, researchers found participants did not perceive gay people as similar to Black people, and therefore did not reduce prejudice. That is, participants did not perceive that they had common goals, another necessary element of the contact hypothesis (Herek & Capitanio).

One study provides an example of successful prejudice reduction when all elements of the contact hypothesis are present. Wilson (1996) used correlation to test the relationship between interracial contact and White persons' anti-Black prejudice. All elements of the contact hypothesis were present. Wilson found that White prejudice declined as interracial contact increased. Data were from the 1990 National Opinion Research Center General Social Survey on 1,372 Whites (Wilson).

### *Models to Test Theory*

This study uses three models to test the contact hypothesis. The first model is Astin's Inputs–Environments–Outcomes (IEO) model of college impact. The second is

the Newcomb model of peer influence. The third is the conceptual model that Pascarella, Edison, Nora, Hagedorn, & Terenzini (1996) and Whitt, Edison, & Pascarella (2001) used in their studies on openness to diversity.

#### *Astin's Inputs–Environments–Outcomes (IEO) Model*

The IEO model is a conceptual framework within a broader body of literature on college impact. Astin (1991) claimed that the IEO model is also a developmental framework, allowing us to ask the question about what factors in the environment encourage student development. Astin said that the main purpose of the IEO model is to measure the effect of the environment by controlling for certain inputs. Educators are looking for changes in students, and so are asking how students change, and why some students change differently than others. The IEO model allows researchers to examine students at two time periods: input and outcome. Researchers are then able to derive answers to the question about what happened during the interim, between the input and the outcome time periods. That is, the Input and Outcome factors—the extensions of the IEO model—become known, and so the central question then becomes: What happens in the Environment? (Astin, 1991).

Astin (1991) said that the most difficult element for the IEO model to assess is the environment. Assessment of the environment reflects values—what gets assessed is what is valued. Assessment is important because it indirectly promotes the development of students. That is, it informs faculty and administrators of what best educates students. When researchers measure the inputs and the outcomes, they are primarily measuring the student—namely, a single entity with limited variables. However, when researchers



assess the environment, they are primarily measuring the institution—namely, one or more entities with an almost unlimited set of variables both within and between them.

Though the main purpose of the IEO model is to measure the effect of the environment, a discussion about outcomes is important because outcome measures almost always reflect a value system. What researchers choose to measure is a matter of perspective, and therefore of relative value. Because there are many types of outcomes (students and faculty vary in what they seek from higher education), Astin (1991) broke outcomes into two types: the cognitive and the affective. However, this division is somewhat artificial, because in many college mission statements the description of the liberally educated is both cognitive and affective (Astin; Grandy, 1988). Outcomes are also both short and long term. Although most college impact studies examine short-term outcomes, many have implications for the long term. Examples of these long-term outcomes include life satisfaction, professional achievement, and civic involvement. This study examines one outcome that is both affective and cognitive, and short and long term.

#### *Newcomb's Model of Peer Influence*

Another college impact theorist is Newcomb (1962), who began his theory with the premise of groups. He said that students are members of groups, and all groups have power over their members. That is, humans need one another, they are social, and therefore create and join groups to survive. In turn, groups have power because, for group cohesion, it is necessary to reward and punish members. Groups develop cohesion in two ways: members develop consensual expectations of one another, and they develop favorable attitudes toward one another. The core aspect of Newcomb's theory, then, is the influence of peer groups.

In Newcomb's (1962) theoretical model of peer influence, peers are most likely to influence other peer attitudes (rather than their skills or their basic personalities). He said that student attitudes change through sharing group norms. These attitude changes are successful to the extent that communication within the group happens in isolation from other influences, and to the extent that the attitudes are important to individual group members. Another factor that determines the level of group influence is the size of the group. Newcomb said that a moderate sized group of 300–400 students, with subgroups, is an ideal size for group influence. Finally, factors that encourage the formation of peer groups are precollege groups, and propinquity during college. Propinquity is defined as nearness in place.

In fact, Newcomb (1962) claimed that the propinquity of the living experience determines its effect as the greatest ongoing source of regular peer contact. This is the environment with the most potential for peer influence. Propinquity determines peer influence because it facilitates frequent, ongoing contact among peers. Newcomb claimed that the goal of faculty and administrators in higher education is not increased peer group influence; rather, the goal is to know the environmental conditions that enhance peer group influence so that educators can maximize this influence in the direction of their educational objectives.

*Pascarella et al. Openness to Diversity Model*

Pascarella et al. (1996) drew upon the college impact and college development theories of Astin (1993), Chickering & Reisser (1993), and Tinto (1975), for the design of their conceptual model to study openness to diversity and challenge. They used four groups of college influences to predict openness to diversity: preenrollment student

characteristics, institutional environment, student academic experiences, and student cocurricular experiences. Each group of college influences used several environmental constructs to predict the openness to diversity outcome. The preenrollment characteristics included: the pretest of openness to diversity/challenge; precollege academic ability; gender; race; age; and precollege academic motivation. The institutional environment characteristics included: average first-year student precollege openness to diversity/challenge; campus racial environment; environmental emphasis on the development of academic, scholarly, and intellectual qualities; environmental emphasis on the development of esthetic, expressive, and creative qualities; environmental emphasis on being critical, evaluative, and analytical; and an environmental emphasis on the development of vocational and occupational competence. Student academic experiences included: credit hours completed; hours studied per week; social science, math, technical, arts, humanities, and natural science/engineering courses; course learning; and interaction with faculty. Student social experiences included: residence environment; fraternity/sorority membership; intercollegiate athletics; racial/cultural awareness workshop; hours worked per week; clubs and organizations; student acquaintances; topics of conversations; and information in conversations (Pascarella et al., 1996).

These three frameworks (Astin, Newcomb, and Pascarella et al.) will be incorporated into this study's conceptual framework. Specific components of each framework will inform the inclusion of constructs in the conceptual model. The Astin (1991) IEO model is the skeletal framework that identifies the need for multiple inputs and environments that may influence the openness to diversity outcome. The Newcomb

(1962) model emphasizes the significant role of peers, and applies the components of the contact hypothesis to the college environment. Finally, Pascarella et al. (1996) add breadth to the full conceptual model, by suggesting multiple inputs and environments to be measured.

### *Openness to Diversity*

#### *Psychological Studies of Openness*

Before we can understand the psychological underpinnings of openness to diversity, it is important to understand the broader but related concept of openness, or open mindedness, in general. Psychologists have studied the attitude of openness, and its related cognitive skill, open mindedness. Baron (2000) theorized that there are three principles of actively open-minded thinking: demonstrated fairness to other possibilities than the one initially favored; information searches that are thorough in proportion to the importance of the question; and perspectives that are appropriate to the amount and quality of the thinking.

There are difficulties in achieving open-minded thinking. Researchers have found that evidence alone does not enhance open mindedness, and therefore does not settle controversial social issues (Baron, 2000; Perkins, Allen, & Hafner 1983, as cited in Kuhn, 1991). Two primary phenomena that arise from this concern over evidence are: “Myside” bias, in which people look for evidence that confirms prior thinking, rather than accepting evidence that may change prior thinking (Perkins et al.); and irrational belief persistence, a process by which irrational beliefs persist despite countervailing evidence (Baron). In both cases, people are not open to counter-evidence; they fail to search impartially for evidence, and they overweigh evidence that supports their position

and under weigh contradictory evidence (Baron). Just as most people do not contemplate, most also use new evidence to corroborate their existing views. Using evidence in this way is the opposite of openness.

Kuhn (1991) studied the problem of evidence on open mindedness as well. To discover whether people are firm in their beliefs, or whether their beliefs change based upon new information, she researched the ways that people develop critical thinking. She conducted qualitative interviews of several hundred people at ages across the life span. Kuhn found the ability to contemplate rare; contemplation is defined as using effort and cognition to generate and continually evaluate opinions. Instead, her research indicated that most people are either absolutist (they definitively know) or multiplistic (they believe no one can know). Conversely, open-minded people are continually receptive to other perspectives, actively search out new evidence to support or contradict those perspectives, and develop their opinions through critical thinking.

The Kuhn (1991) research parallels Perry's (1981) theory of cognitive and ethical development. In the Perry positions, students move from duality (Kuhn's absolutist) to multiplicity (Kuhn's multiplistic) to relativism (Kuhn's contemplative). The distinguishing factor of the Perry relativism position compared to the other positions is the greater amount of critical thinking and reflection that has gone into developing perspectives (Evans, Forney, & Guido-DiBrito, 1998). The Perry relativism position corresponds with Kuhn's contemplation ability: both are characterized by critical, open-minded thinking.

Baron (2000) theorized that society encourages the myside bias rather than open-minded thinking. This is evident because most people confuse good thinkers with

“experts,” strong leaders with “rigidity,” and are presented with “advocates” who display decisive, fixed positions rather than active critical thinking. As higher education is a subset of this larger society, a struggle is ensuing because colleges and universities are searching for ways to enhance student critical thinking within this larger context of myside bias (Kuhn, 1991). To educate young people to become part of a critically thinking society, Kuhn noted that we need to foster students’ acquisition of reason and judgment.

#### *Studies on Openness to Diversity in College Students*

It is useful to understand the college environments that best support students’ development of openness to diversity. Attitudes, particularly openness to diversity, are salient constructs to research. This is because once students develop attitudes in college, these attitudes are likely to remain with them through students’ lives. In a longitudinal study, Newcomb found that sociopolitical attitudes that developed in college in a group of women remained stable into old age (Alwin, Cohen, & Newcomb, 1991). The best opportunity to affect student attitudes is during the college years, when they are forming their attitudes (Astin, 1993).

Researchers have examined the factors that influence openness to diversity at various times in the undergraduate experience. Pascarella et al. (1996) and Whitt et al. (2001) used the Astin (1991) IEO conceptual model in their studies on openness to diversity and challenge; variables of influence were separated into pre-enrollment student characteristics, the institutional environment, student academic experiences, and student social experiences. They defined the outcome variable, openness to diversity and challenge, as “an assessment of an individual’s openness to cultural, racial, and value

diversity, ...and the extent to which an individual enjoys being challenged by different ideas, values, and perspectives” (Pascarella, et al., 1996, p. 179).

In the first in a series of studies of 2,416 students at multiple institutions, Pascarella et al. (1996) used ordinary least squares regression to determine the unique effect of multiple independent variables on openness to diversity. In a second phase of the analysis, they applied cross product terms to race and gender, to look for significant effects. The study found, net of other effects, women had higher openness to diversity than men, and students of color had higher openness than White students. Older students had a higher openness to diversity than younger students. Precollege academic ability (using the Collegiate Assessment of Academic Proficiency, developed by the American College Testing Program), was also a significant predictor of openness to diversity in this study. Of the institutional environmental effects, perception of the institution as having a nondiscriminatory racial environment positively predicted openness to diversity and challenge. Of the academic experiences, hours per week spent studying had a positive effect on the outcome variable, and number of mathematics courses taken had a negative effect. Of the social experiences, living on campus, hours worked, and participation in a cultural awareness workshop had a positive effect on end-of-first-year openness to diversity and challenge (however, joining a fraternity or sorority had a significantly negative effect). Pascarella et al. postulate that the negative effect of fraternity and sorority membership for White students [the effect was slightly positive for students of color] could be because of the influence of relatively homogenous environments. They suggest that programming such as cultural awareness workshops might mitigate this effect for White fraternity and sorority members.

In addition, three peer interaction constructs were significant in predicting the Pascarella et al. (1996) openness to diversity outcome: (a) student acquaintances, which included the nature of student interaction with peers; (b) topics of conversation, which included the nature of conversations with peers; and (c) information in conversations, which was specific aspects of those conversations, such as “changed your opinion as a result of the knowledge or arguments presented by others” (Pascarella et al.). The authors reinforce the importance of peer interaction, both in the intensity of the interaction and in the topics of conversation, a phenomenon advanced by Astin (1993).

In a related study of the openness to diversity and challenge in the second and third years of college, using the same longitudinal data as Pascarella et al. (1996), Whitt et al. (2001) found that women, students of color (in the second year only), and older students were more open to diversity and challenge than men, White students, and younger students, respectively, after controlling for pre-college openness. Ultimately, Whitt et al. found that seven variables had a positive relationship with openness to diversity and challenge across all three years of college: pre-college openness to diversity and challenge (the pre-test), women, older students, perceptions of a nondiscriminatory racial environment, participation in a cultural awareness workshop, interaction with diverse peers, and conversations with students in which differing ways of thought were involved. Race and campus residency were significant in the first and second years, but lost significance by the third year of college (Whitt, et al., 2001).

In a third study that used the same data set to determine whether racial composition of a campus influenced the openness to diversity of African American students, Flowers and Pascarella (1999) found that it did not. However, consistent with



the prior studies, the following variables were significantly positive at the end of either the first or second year of college: perception of the racial climate, participation in a racial or cultural awareness workshop, and interaction with peers (Flowers & Pascarella).

In a series of studies related to openness to diversity, researchers developed and measured the construct universal diverse orientation (Miville, Gelso, Pannu, Liu, Touradji, Holloway, et al., 1999). Universal diverse orientation (UDO) encompasses appreciation of differences and similarities among people, and indicates a general openness toward diverse cultures and people. The UDO scale was significantly and positively correlated with measures of racial identity, empathy, healthy narcissism, feminism, androgyny, and negatively correlated with homophobia and dogmatism. (Miville et al.). The scale positively correlated with positive racial identity (for both Blacks and Whites). Just as with the openness to diversity and challenge scale from Pascarella et al. (1996) and Whitt et al. (2001), women scored higher than men on the UDO, and people of color scored higher than White people (Miville et al.).

In a study of UDO correlates, 207 first year students were surveyed at new student orientation at a large public research university (Fuertes, Sedlacek, Roger, & Mohr, 2000). A positive correlation was found between UDO and all three correlates: attitudes toward help seeking, academic self-confidence, and diversity orientation. The help-seeking scale measures attitudes toward help seeking, such as seeking counseling for personal and vocational concerns. The academic self-confidence scale measures expectations for academic success, as well as academic self-concept and likelihood of persistence. The diversity orientation scale measures a behavioral orientation toward diversity, and includes items in the following three areas: diversity in attitudes toward

seeking multicultural experiences in college, tolerant views toward gay and lesbian students, and awareness and tolerance of religious beliefs. The correlation between UDO and diversity orientation was .57. In a separate regression analysis, UDO strongly and significantly predicted diversity orientation, after controlling for gender and race ( $p < .0001$ ). These relationships suggest that attitudes of openness (UDO) may be related to future diversity related behaviors (orientation toward diversity), such as seeking multicultural experiences (Fuertes, et al.), which corroborates Pettigrew's (1998) views on friendship potential as an addition to Allport's (1954) contact hypothesis.

These studies have limitations. First, the researchers often do not know why groups differ on diversity measures. One resolution would be qualitative studies that ask students directly about their experiences in developing their openness to diversity. Secondly, these studies involve self-reported answers, which can affect their reliability, as respondents may want to appear to be more tolerant than they actually are. Finally, some of the studies do not include universities across the broad spectrum of Carnegie classifications.

### *Challengers of Openness to Diversity*

Some social commentators believe that college and university environments restrict, rather than encourage, a positive climate for openness to diversity (Bennett, 1992, 2003; D'Souza, 1991, 1995; Steele, 1990, 1998). There are several conceptual books, but few research studies to test these concepts. D'Souza, for example, believes that college climates are made worse by conversations about race, ethnic and cultural organizations, and race-based admissions. He believes race consciousness (which he defines as a constant focus on race) makes friendships more difficult between White and

Black students, primarily because the dominant group holds resentment of students of color for preferential admissions and treatment. He said that although Whites will not express their resentment (due to social pressure to not say things that may come across as racist), they are “fed up with minority double standards and intimidation” (D’Souza, 1991, p. 228). He believes current higher education practice strengthens hostility because it encourages inequality, distrust, and excess (acceding to activist demands) due to the affirmative action policies the institutions abide by. Racial hostility contributes to a decline in openness, and the climate does not foster diversity of opinions because there is not an honest discourse about race.

The efforts of the administration...to regulate and enforce a social etiquette have created an enormous artificiality of discourse among peers, and thus have become an obstacle to that true openness that seems to be the only sure footing for equality (D’ Souza, 1991, p. 156)

D’Souza believes that administrators’ overly specific construction of conversations about race and diversity is an obstacle to openness, rather than facilitative of openness.

Shelby Steele (1990) is critical of U.S. colleges and universities because they focus on racial and cultural differences rather than similarities. He believes the politics of difference have encouraged conflict because “when difference is the currency of power, each group must fight for the innocence that entitles it to power” (Steele, 1990, p. 145). Identity politics, he and others claim, has increased the numbers of intolerant, closed-minded people on campuses. Subsequently, he believes there is less interaction among diverse peers because of race consciousness (Bennett, 1992; Steele, 1998). Conservative

critics agree that racial unconsciousness and similarities among races should be the focus in the environment, not race consciousness and dissimilarities.

Further, critics claim that the problem with multiculturalism on campus is that it restricts the development of minority students (D'Souza, 1991, McWhorter, 2000; Steele, 1990). Critics claim that identity politics encourages a victim-focused mentality in minorities, and that entitlement programs such as affirmative action have widened the achievement gap between White students and students of color (Steele, 1990). D'Souza (1991) believes that the current treatment of students of color is coddling of and condescending to them, and does not support their learning because they are led to believe they cannot do better, gives them the message that hard work will not pay off (because the system will always be against them), and encourages them to hold onto a "victim status." Steele similarly believes practices in higher education, such as the exclusivity of cultural and ethnic clubs, is the opposite of inclusion and openness, and merely represents collective entitlement. He claims that universities practice entitlement toward minority students because it is less costly than investing in student development. Further, he maintains that integration rather than separation of minority students is where the hard work lies (Steele, 1990). Although most diversity critics write conceptually, there is some empirical research on the negative outcomes of diverse environments.

The empirical research on negative effects of diversity in educational environments is limited; they are from the 1960s and 1970s, are centered on K-12 education, and are focused primarily upon structural diversity. For example, Blalock (1967) found that conflict between Blacks and Whites increased as structural diversity increased. Kanter (1977) found that if minority groups (in this case, women) were too

small in number, they were seen as tokens, and attitudes toward women in general did not change. Thus, empirical support for the negative effects of a diverse environment is outdated, is limited to the effects of structural diversity, and to environments that are not specific to colleges and universities.

### *Background Characteristics*

#### *The Role of Developmental Theory in Understanding Differences in Background Characteristics*

There are two major bodies of research that inform the fields of higher education and college student personnel—college impact research and student development research—yet these bodies of research rarely interconnect (Stage, 1996). College impact theories take a macro level approach and examine the college environmental influences on student outcomes such as satisfaction, growth, and persistence. Student development theory takes a micro level approach and examines the psychological developmental levels of students (Stage). Although this is a study about college impact, developmental theories will be drawn upon to elucidate the total influences and effects of the college environment on students. Stage noted that, except for a couple of studies in the early 1970s, research on students has generally been focused on either developmental or college impact approaches; yet these two approaches have not been integrated within research studies. This separation of the two bodies of research limits their implications, because students at different levels of intellectual development or of different psychosocial types respond differently to the environment. Thus, it is important to consider the student development research when reviewing and interpreting studies that indicate significant differences in college outcomes among students. Although this is a

college impact study, aspects of developmental theory will be drawn upon to integrate the two bodies of research, and to provide greater understanding for why differing effects among students may occur (Stage).

### *Race, Gender, and Age*

Prior literature indicates that gender predicts openness to diversity, and that women have a higher openness to diversity than men (Pascarella et al., 1996; Pike, 2002; Whitt et al., 2001). One developmental explanation for the difference between men and women is offered by Gilligan (1993). She found that women manifest values of development in ways different from men. In general, men focus on developing a sense of justice, equality, fairness, and reciprocity. This focus leads to values of separateness and independence. Women, however, focus more upon developing a sense of caring, intimacy, and interdependence. Women's focus on these traits leads them to seek connection and attachment to others (Gilligan). Women's focus on connection may encourage peer interaction, which may then influence their growth in openness to diversity.

Students of color have a higher openness to diversity than White students (Pascarella et al., 1996; Pike, 2002; Whitt et al., 2001). These differences in race and openness to diversity have been explored by Helms (1995), who researched the racial identity development of students of color and White students. Because students of color are more likely to be in a minority group within the dominant community, they more likely have, by necessity, developed diverse perspectives and openness to diversity by the time they reach college age. This is less true of White students, particularly among those who have lived in relatively segregated environments.

Increasing age is a third significant demographic predictor of openness to diversity (Pascarella et al., 1996; Whitt et al., 2001). Age is related to development; college student development theories explore the ways in which increasing maturity and age are associated with increasing levels of development (Baxter-Magolda, 2001; Chickering & Reisser, 1993; King, 2000; Perry, 1981). College student development (specifically cognitive development) is discussed more thoroughly under the section “Academic Involvement–Critical Thinking and Cognitive Development.”

#### *High School Achievement*

High school achievement, as measured by a standardized test of academic achievement, was only significant in predicting openness to diversity in the first year of college (Pascarella et al., 1996; Whitt et al., 2001). This finding is consistent with other studies noting that standardized tests predominantly predict only the first year of college experiences (Sedlacek, 2004).

#### *Environmental Characteristics*

##### *Peer Interaction*

Several studies on the impact of college on students, most notably the large college impact research reviews of Pascarella and Terenzini (1991) and Astin (1993), cited the importance of peer interaction as a predictor of college outcomes, including diversity outcomes. In addition, studies specific to openness to diversity identified peer interaction as an important predictor (Flowers & Pascarella, 1999; Pascarella et al., 1996; Pike, 2002; Whitt et al., 2001).

Astin defined peers as a “collection of individuals with whom the individual identifies and affiliates and from whom the individual seeks acceptance or approval”

(Astin, 1993, p. 400). Peer groups that have a particularly strong effect on cultural awareness include those that come from high socioeconomic status backgrounds, have high levels of altruism, and are feminist, artistically inclined, and liberal in political orientation (Astin, 1993). Newcomb (1962) said that peer groups are also influential to the extent that they are small to moderate in size, isolated from outside influences, homogeneous, and conformist. (Although it might seem that homogenous and conformist peer groups would have fewer benefits than diverse peer groups, Newcomb did not say that diverse peer groups could not be beneficial. Instead, he stated that homogenous groups can be particularly influential, and the direction of influence is not always positive.)

Peer interaction affects students relative to level of intensity (Weidman, 1989). That is, peer on peer influences predict college outcomes to the extent that such influences incorporate intensity of feeling and frequency of interaction (Weidman). Intensity and frequency imply meaningfulness. Meaningful peer relationships are consistent with the contact hypothesis, which states that the contact must be meaningful and intimate in order for prejudice to decline (Allport, 1954). Therefore, meaningful peer interaction is likely particularly influential on openness to diversity.

#### *Co-Curricular Involvement*

##### *Greek membership and intercollegiate athletics.*

Pascarella and Terenzini (1991) summarized from several studies that the effect of Greek society membership on student attitudes and values is liberalizing for those who are more conservative than their Greek peers, while membership has a conservative influence on those with more liberal attitudes than the others. Astin (1993) summarized



that fraternity and sorority membership has negative effects on attitudes of liberalism, and positive effects on attitudes of libertarianism. In the openness to diversity and challenge studies, fraternity and sorority membership showed a unique pattern of effects in the first year. There was a small positive effect of Greek society membership on students of color, and a strong negative effect on White students (Pascarella et al., 1996).

Intercollegiate athletics also had an interesting pattern of effects on openness to diversity and challenge. In various studies on openness to diversity, athletic participation had a negative effect on the outcome in the first year (though not significant), and a significantly positive effect in the third year (Flowers & Pascarella, 1999; Pascarella et al., 1996; Whitt et al., 2001). There are no known studies of athletic participation influence on other student attitudes (Astin, 1993; Pascarella & Terenzini, 1991).

#### *Ethnic clubs.*

One study found that those who participate in ethnic clubs are more likely to also interact informally across race and ethnicity, and to become more open to diversity (Hurtado, Dey, & Treviño, 1994). In the openness to diversity and challenge studies, participation in student clubs was not a significant predictor of openness to diversity in any year; however, the instrument did not ask about participation in specifically ethnic student clubs (Pascarella et al., 1996; Whitt et al., 2001).

#### *Academic Involvement*

##### *Critical thinking and cognitive development.*

Most college impact studies have not indicated a relationship between critical thinking and openness to diversity (Astin, 1993; Pascarella & Terenzini, 1991). However, the Whitt et al. (2001) study indicated a significant relationship between an

environmental emphasis on being critical, evaluative, and analytical and openness to diversity in the second year of college. Cognitive development theory also indicates that critical thinking skills and openness to diversity are related (King & Kitchener, 1994).

Research on the cognitive development of college students indicates that cognitive growth is a stage-based process. In one theoretical paradigm, there are three stages of cognitive development: pre-reflective, quasi-reflective, and reflective (King & Kitchener, 1994). Pre-reflective thinking draws from personal experience or authority, and is a sort of “ignorant uncertainty.” Quasi-reflective thinking is characterized by the realization that all knowledge is contextual and relative, and is a form of “intelligent confusion.” It is not a form of thinking that encourages commitment to a set of values. Finally, reflective thinking is characterized by the belief that each individual is responsible for constructing knowledge, based upon reflection on diverse perspectives (King & Kitchener). To foster reflective thinking, students are asked to reflect on complex issues by seriously considering multiple perspectives.

Reflective thinking is related to reasoning about diversity issues (King, 2000). Understanding cultural differences cannot be achieved by prereflective thinkers, because they don’t understand the basis for differing points of view. Prereflective thinkers believe there is one correct interpretation of knowledge. Therefore, in order to achieve reflective thinking about difference, students need to construct knowledge by considering differing perspectives, emotions, and values (King & Shuford, 1996). In one study, there was a moderately positive correlation between reflective thinking and tolerance for diversity (Guthrie, King, and Palmer, 1999). Reflective thinking about difference requires that

students be secure enough in their own identities that they do not experience other perspectives as a threat to their sense of self (Kegan, 1994).

Kegan (1994) created a theory of cognitive development in which people move through orders of consciousness: from traditionalism, to post-modernism, to modernism. In his theory, the key shift is from traditionalism (King and Kitchener's (1994) quasi-reflective thinking) to modernism (King and Kitchener's reflective thinking).

Traditionalism represents the ability to form abstractions, or the beginning of the ability to reflect. The leap to modernism entails the ability to self-author, to reflect on one's own beliefs, and to create a strong sense of self within a pluralistic world.

The great challenge of modern life is the development of self-authorship and reflective thinking (Baxter Magolda, 2001; Kegan, 1994; King & Kitchener, 1994). Because modern life challenges us in so many ways, says Kegan, modernity requires cognitive development at the level of self-authorship. Difference is the greatest source of growth toward this self-authorship (Kegan). This is because difference often includes diverse perspectives, which in turn encourages students to reflect on ways of constructing reality alternate to their own. Students use these realities to develop their own knowledge, values, and beliefs. Thus, students' exposure to diverse perspectives provides them the greatest opportunity to achieve self-authorship (Kegan).

#### *Hours studying and coursework.*

In studies on openness to diversity, hours per week spent studying was significantly positively related to the outcome in the first year, but not in the second or third years (Pascarella et al., 1996; Whitt et al., 2001). In a related study, the hours per week students spent studying was significantly positively related to openness to diversity

in the third year, but not in the first or second years (Flowers & Pascarella, 1999). Hours per week studying was not a strong effect in any of the openness to diversity studies, which may explain why the effects differ among the studies.

#### *Faculty interaction.*

The impact of interaction with faculty on student attitudes and values was modest, and the magnitude of the effect is not very clear (Pascarella & Terenzini, 1991). For example, in a study on the effect of faculty interaction on the development of humanitarian and civic values, researchers found a significantly positive effect for White women, but no effect for Black women, or for White or Black men (Pascarella, Ethington, & Smart, 1988). In studies on openness to diversity, faculty interaction had no significant effect in the first or second years and a moderately significant effect in the third year. However, the effects were conditional—they were positive for men, and negative for women (Pascarella et al., 1996; Whitt et al., 2001). In another study on openness to diversity by residence arrangement, there was no effect of faculty interaction (Pike, 1999).

#### *Campus and Residence Hall Climate*

Hurtado and colleagues developed a model for evaluating the campus climate (Hurtado, Milem, Clayton-Pedersen, & Allen, 1999). In their conceptual model, campus climate is influenced by an institution's historical legacy, structural diversity, behavioral climate, and psychological climate. Historical legacy refers to the institutional history with regard to diversity, including the remaining vestiges of that legacy, such as the naming of buildings. Structural diversity refers to the representation of historically underrepresented groups at all levels on the campus. Behavioral climate refers to the

interactions across groups within the institution. Finally, psychological climate refers to the perceptions of intergroup relations, and to attitudes toward diversity. This study is focused on the psychological climate (the attitude of openness to diversity) within the model developed by Hurtado and colleagues.

Hurtado (1992) found that the importance of a positive campus climate for students' development of greater openness to difference was significant. Similarly, students who perceived the campus climate to be positive for diversity were more likely to have openness to diversity (Pascarella et al., 1996; Whitt et al., 2001).

In studies of climates in living environments on campus, there is an interesting pattern of results with regard to perceptions of the living environment. In a multi-campus study of living-learning program outcomes, positive perceptions of the living environment were predictive of growth in liberal learning (which included openness to diversity) and in cognitive complexity. When residence halls were perceived to be academically and socially supportive, students were more likely to have growth in liberal learning and cognitive complexity (Inkelas, Johnson, Lee, Daver, Longerbeam, & Vogt, 2005). In another study, Inkelas and Weisman (2003) found that students in living-learning programs perceived their environment more positively than did students in traditional residence halls.

Perceptions of supportive campus and residence hall climates for diversity are part of the institutional support element of the contact hypothesis (Allport, 1954). The two aspects of the college environment discussed next—civic engagement and living-learning programs—incorporate not just institutional support, but also the other elements

of the contact hypothesis (i.e., meaningful peer relationships with common goals), and so receive a more lengthy review.

### *Civic Engagement*

#### *Theoretical Discussions of Civic Engagement*

There has been a surge of interest on the part of colleges and universities to renew their civic mission to society (McTighe Musil, 2003; National Association of State Universities and Land-Grant Colleges, 2001; Wingspread, 1993). Colleges and universities have recently reaffirmed their commitment, most evident by the Campus Compact, a coalition of over 900 colleges and universities focused on civic engagement in higher education. Over 500 college and university presidents signed a statement from the Campus Compact on the importance of higher education's civic responsibility (Campus Compact, 2004).

The environments of colleges and universities, and their ability to create learning conditions under which students can learn to serve others, are a consideration. A vice president of the American Association of Colleges and Universities recently conceptualized the status of university growth in readiness to educate students about citizenship. McTighe Musil (2003) said that institutions have varying phases of citizenship, including: (a) exclusionary (not trying to reach out to the local community); (b) oblivious (trying, but are insensitive in working with the local community); (c) naïve (trying but making cultural blunders); (d) charitable ("we're helping them"); (e) reciprocal (working jointly with the community); and (f) generative (focused on civic empowerment, with long term prosperity as the goal). A recent model of individual

readiness for civic responsibility parallels this conceptualization of institutional readiness for civic responsibility (Colby, Ehrlich, Beaumont, & Stephens, 2003).

Colby and colleagues (2003) defined individuals who are civically engaged as: expressing and acting upon their knowledge and understanding of ethical and social issues, committed to contributing to society, and appreciating cultural pluralism (Colby, et al.). In response to the question, “what can higher education do to encourage the civic development of students?” Colby and colleagues developed a theory incorporating three capacities needed for mature moral and civic functioning:

1. Moral and civic understanding of democratic principles, including the ability to interpret knowledge.

College attendance increases the development of moral judgment (Gilligan, 1993). Students develop moral judgment and an understanding of morally ambiguous situations, when they learn about justice and develop the ability to trust others. Decisions based on a person’s moral development depend upon framing issues in ways that elicit judgments, which is why classroom interaction on moral issues is effective at enhancing moral development. Many students remain in a state of moral relativism (the belief that morality is contextual) but do not reach commitment (a stage in which identity and responsibilities are affirmed (Gilligan). Colby stated, “people who make a consistent effort to be open minded and take others’ perspectives seriously are facilitating their own moral development” (Colby et al., p. 120).

2. Motivation to do the right thing, which incorporates goals, values, perseverance in challenges, compassion, hope, and identity development.

Research on college outcomes indicates that most students develop general values in college, including respect, tolerance, and belief in civil liberty and positive social change (Pascarella & Terenzini, 1991). However, research indicates these value gains in college are modest (Pascarella, et al., 1988). For example, less than two thirds of college graduates vote, and only one third regularly follow public affairs (Colby et al., 2003).

Students develop a strong sense of self through mentoring opportunities and through leadership experiences. A study using grounded theory methodology involved participants with significant leadership experiences (Komives, Casper, Longerbeam, Mainella, and Osteen, 2005). The study revealed that a student's identity as a leader develops through stages. A higher stage of leadership identity was related to a stronger sense of self.

3. Practice and skill development, which includes the ability to be effective, to communicate, and to work effectively with diverse others.

Colby et al. (2003) claimed that students can develop a sense of efficacy and knowledge that civic engagement is a matter of importance. In addition, they can be empowered to effect change. She cautioned that negative emotions do not arouse students in sustaining ways, and they are particularly not effective in students with low levels of efficacy. The skills needed are deliberation, argument, and consensus building (Colby et al.).

Working effectively with diverse others implies that students have developed the capacity to be open to differing points of view (Walker, 2000). The ability to see the realities of the other—to be civically engaged—is the core aspect of the caring leader



(Noddings, 1984). The ability to reason requires students to seek alternative views and interpretations of knowledge. The ability to reason also requires one to empathize with others and to use intuition and emotion to discern one's consistent self within changing, highly contextual, and diverse environments (Walker). Changing the way students interpret moral situations requires immense effort of them. The habits of critical thought include, at the core, the ability to continually challenge oneself with new information. Walker noted this is particularly difficult for students in the dominant group, because they must discern more diligently to challenge themselves. She claimed that discerning through critical thought is more difficult for these students because they have more opportunity to define and less reason to challenge the moral context, and so they may have less ability to hear others' perspectives. Students who think critically are better able to remain civically engaged (Walker).

#### *Empirical Study of Civic Engagement*

An aspect of civic programming that has been researched is the general effect of college on students' sense of civic empowerment. Civic empowerment is the perception of the ability to effect change in civic life. In Astin's (1993) large-scale study of college impact, at the end of college, students showed only a slight decline in the construct: "realistically, an individual person can do little to bring about changes in our society." For college students in general, the academic experience may not contribute to their sense of themselves as empowered citizens capable of effecting change in society. Civically empowering elements such as service learning and community service need further study; specific programming elements that contribute to a sense of civic empowerment need to be identified.

In early studies on the effect of college attendance on the development of civic values, results were inconclusive (Pascarella, Smart, & Braxton, 1986). The civic values scale included items such as: the importance of programs to clean up the environment, helping others, community action programs, being a community leader, influencing social values, and influencing the political structure. In one study, there was no increase in humanitarian and civic values due to college attendance (Pascarella, et al., 1986). The author concluded that college alone did not predict greater civic involvement; rather, he theorized that specific college experiences determine the development of civic values.

A later study, using a longitudinal, causal model on the influence of college on humanitarian and civic involvement values, found several indirect effects (Pascarella, et al., 1988). Using structural equation modeling, the researchers found that the college experience, including leadership during college and social service occupation after college, indirectly influenced humanitarian and civic involvement values.

### *Community Service*

In a study on the long-term outcomes of volunteerism in college, Astin and colleagues (1999) found that the effects of community service persisted five years after graduation. He theorized that community service is a form of involvement; the strongest forms of involvement include academic experiences, and peer and faculty interactions. Community service is powerful because it has the potential to include all three of these forms of involvement. The study analyzed long term outcomes of service nine years after the start of college. Researchers asked if students had a better understanding of social problems, poverty, racism, and environmental issues nine years after volunteering. Results showed that the habit of volunteering persisted from high school through college

to five years post-college. Outcomes included a sense of civic empowerment (a decline in the belief that 'realistically, an individual can do little to bring about changes in our society.') Astin, Sax, and Avalos (1999) concluded that undergraduate service had direct and indirect effects on post-college outcomes (both affective and cognitive). Those outcomes included being: socially responsible, committed to serving the community, civically empowered, committed to education, socializing across racial lines, and committed to promoting racial understanding. The strongest limitation of the study is that the measure of service involvement was on only one variable: time on volunteer work during the last year of college, and five years later (nine years from the start of college).

In a related study on leadership and civic values, students who participated in leadership activities (defined as community service, peer mentoring, elected office, and leadership development workshops), predicted multicultural and community awareness (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001). The study used multiple regression methodology and controlled for confounding factors. The construct of multicultural and community awareness had the following elements: acceptance and knowledge of others from different races and cultures, interpersonal skills, understanding of community problems, ability to work cooperatively, and understanding of national problems (Cress, et al.).

### *Service Learning*

Astin and Sax (1998) defined service learning as the presence in undergraduate programs of community service, with the addition of a course component that integrates community service with academic learning. Jacoby (1996) defined service learning as community service with a reflective learning component, whether in the curriculum or

the co-curriculum. Researchers have found that students often participate in service learning for reasons of civic responsibility (to help others, for personal satisfaction, and to improve their communities). Astin and Sax found that students who participated in service learning had greater academic development, life skill development, and sense of civic responsibility. Civic responsibility included promoting racial understanding, participating in community action, and influencing social values. Civic responsibility had the highest effect from pretest to posttest of all constructs in the study, indicating that students were more highly committed to serving society after participation in service learning (Astin & Sax).

There were other positive outcomes of service participation, in addition to a sense of civic responsibility. These included academic, psychosocial, and satisfaction outcomes. Service participation influenced study time, time with faculty, grade point average, and gains in general knowledge. Psychosocial benefits included understanding community problems, knowledge and acceptance of different races/cultures, interpersonal skills, critical thinking skills, and working cooperatively. Satisfaction benefits included a sense of more relevance of education to life, preparation for a career, leadership skills, and self-confidence (Astin & Sax, 1998).

It has been shown that volunteerism alone, without a service learning component, is positively associated with promoting racial understanding (Astin, 1993). However, in one empirical study, researchers found that students who participated in service learning had cognitive outcomes significantly higher than students who participated in community service alone (Vogelgesang & Astin, 2000).

A related grounded theory study asked the question, “How does service learning affect students’ understanding of diversity?” The core category that emerged was relationship building, which occurred through building common ground, efficacy, and empathy and compassion (Jones & Hill, 2001). Participants were six students and eight community members. Relationship building occurred through the processes of learning about cultures, exploring commonalities and differences, and crossing boundaries. More specifically, the processes involved contact, dissonance (new knowledge of the other), and finally turning the knowledge of the other into reflection on oneself. The recommendations for practice included creating opportunities for dialogue on diversity, reciprocity, and sustaining relationships (Jones & Hill).

A recent study on the long-term effects of service learning participation involved eight students, two to four years after their service learning experience (Jones & Abes, 2004). The research questioned whether service learning led to self-authorship, and whether the effects were sustained several years after the service experience. Researchers found that service learning contributed to cognitive complexity, openness to new relationships, and self-efficacy. Growth in cognitive complexity was evidenced by critical thinking and by openness to new ideas and new people. Cognitive complexity was encouraged by the experience of dissonance between previous thoughts and new perspectives. Researchers concluded that service learning settings offer complexity through the opportunity to integrate cognitive growth, new relationships, and self-authorship (Jones & Abes).

In another longitudinal qualitative study, Youniss and Yates (1997) explored how community service influences moral and political development in adolescents. Using a

case study methodology, they interviewed 160 Black middle class juniors at a Catholic school in Washington, D.C. They also conducted alumni surveys, reaching a total of 147 respondents. Two themes emerged from these studies that are relevant to the influence of civic engagement on the development of openness to diversity. First, students said that community service opened them to the plight of others such as the homeless. The combination of course and service requirements gave them contact with people who were different, and helped them to overcome stereotypes. Many students expressed that they learned about, and valued, people different from themselves that they didn't see as human before their service. Students also developed respect, forgiveness, and tolerance toward others. Second, the students developed responsibility for making society a better place. After their service, when students discussed society in general, they expressed a sense of interdependence and compassion (Youniss & Yates).

In a qualitative case study of students in service learning settings, Rhoads (1997) noted that students were forced to confront otherness and realize more complicated forms of cultural diversity; thus, they developed their capacity for citizenship. Based on this study, Rhoads proposed the conceptual idea that the power of education to advance citizenship depends upon incorporating civic engagement (the most powerful element of which is service learning) with liberal learning (Rhoads).

Research on civic engagement indicates it is powerful to the extent that it changes perceptions and attitudes. Perceptions gained from being civically engaged are most often associated with a commitment to serving or improving society. Attitudes gained from being civically engaged are most often associated with the sense that one is able to improve society, as sense of civic empowerment.

### *Living-Learning Programs*

Living-learning programs are an example of a potentially powerful environment that often includes elements of civic engagement, as well as other environmental elements such as peer interaction and a positive climate. These environments have been intentionally created to enhance learning, including, possibly, growth in openness to diversity.

Learning communities, with many similarities to living-learning programs, are defined by Shapiro and Levine (1999) as having eight components: (a) They break students and faculty into smaller groups through common coursework; (b) They encourage integration of the curriculum; (c) They help students form peer networks; (d) They provide the opportunity for students to learn the college environment; (e) They bring faculty together; (f) They focus on learning outcomes (g) They provide a setting for support services; and (h) They provide an opportunity to examine the first year experience.

Lenning and Ebbers (1999), in their useful synthesis of the literature on learning communities, found that learning communities led to such outcomes as more complex thinking, a more complex world view, and a greater openness to ideas different from one's own. In addition, in a study done by Tinto (1994) at LaGuardia community college, a significant outcome of involvement in a learning community was a greater appreciation of diversity (Tinto, 1994). In a summary of a qualitative and quantitative study of three learning communities at three universities, other outcomes included enhanced peer group support, integration of learning, and higher social and academic involvement (Tinto).

Living-learning programs are a residence-based type of learning community (Shapiro & Levine, 1999). They are designed to combine the out-of-class and in-class experiences that Newcomb (1962) wrote about. The characteristics of residence based learning communities, according to Shapiro and Levine are: (a) they have an intentional link from the academic to the social environment; (b) the faculty is committed to the program; and (c) students learn in a collaborative environment. This combination of elements in living-learning programs has the potential to impact students at a broader and deeper level than they might experience in a more traditional college environment (Shapiro & Levine).

One qualitative study on a living-learning program was completed as a dissertation at Arizona State University. Sells (1996) found that students who participated in a living-learning program experienced a sense of community support, and that support was important in their ability to become more interactive with peers.

Jones (2000) conducted a quantitative study of several living-learning programs at a large research university. Although he did not examine openness to diversity, he did find some interesting associations between peer interaction and living-learning programs. Jones examined the effects of living-learning program participation on student integration and student academic outcomes, while controlling for pre-college academic ability and aptitude. Jones found that all living-learning programs had significant effects on students on all outcome variables. Specifically, living-learning students had more academic conversations, more conversations about social and cultural topics, and a higher GPA than non-living-learning students. However, the effect sizes were small (Jones).



Some early studies of living-learning programs looked at similar peer interaction and diversity outcome variables as those studied in contemporary research. They found that peer interaction and participation in living-learning programs positively influenced diversity outcomes. In one early study, living in an experimental living-learning setting was associated with the development of humanitarianism (Newcomb, Brown, Kulik, Reimer, & Revelle, 1970). Humanitarianism in this study incorporated the concept of openness to diverse others. In a longitudinal causal model on values, intellectual orientation, and personal development of students at a large liberal arts college, Lacy (1978) examined both a living-learning environment and a comparison environment at a single institution. Lacy found that students in the living-learning program changed over a period of one year on two of the values outcome measures. First, they gained significantly in liberalism; liberalism in this study included social, political, and economic values, and an increase in liberalism indicated a positive orientation towards political, social, and economic change. The direct effect of living-learning participation on the liberalism outcome became insignificant when mediated by interpersonal interactions. Further, the interaction needed to be on particular topics (Interaction was defined as discussion of public affairs, social issues, and serious topics), and that students had to have attraction for one another, in order for the effect to occur. Attraction was not defined, a limitation of this study because it makes it difficult to replicate. A more simple measure of peer interaction, frequency of interaction, did not have a significant effect on the outcome measures. Although interactions were similar in frequency in living-learning and comparison groups, it was the type of interaction that differed. This study has importance for clarifying that it is interactions structured around specific topics (such as

art, culture, public affairs, and social issues) that have the greatest potential to influence student values (Lacy).

In a more contemporary study, Inkelas and Weisman (2003) compared student experiences and outcomes across three types of living-learning programs at a research extensive university. They asked whether living-learning students were more involved than traditional residence hall students, and whether students in living-learning programs had higher academic transition, preferences for challenging academics, and openness to new perspectives. They also asked about differences among three types of living-learning programs: curriculum based, transition, and honors. The study used a stratified random sample of 4,269 students. The comparison sample was stratified by race, gender, and other variables in order to be equivalent to students in the living-learning sample (Inkelas & Weisman).

Using Astin's (1991) IEO conceptual model, variables were analyzed with ANOVA and hierarchical least squares regression analysis (Inkelas & Weisman, 2003). The ANOVA revealed that students in living-learning programs were more involved on several levels of college involvement. In the regression analysis, students in living-learning programs had significant positive openness to new perspective outcomes, and those differences reflected differences in program type. Curriculum type programs had the strongest effect on openness to learning new and different perspectives. Social and cultural interactions with peers were the strongest environmental predictor of openness to new perspectives. The next highest predictor was community service, significant for curriculum-based programs, and for transition programs (Inkelas & Weisman).

Pike (2002) examined the effects of on- and off-campus living arrangements on students' openness to diversity. He looked at three types of living arrangements: freshman interest groups, sponsored learning communities, and traditional residence halls. The Pike study used data from 502 first time college students at a research university. Using a path model, Pike found that living on campus was directly and significantly associated with greater openness to diversity for all three types of living arrangements. Living in a freshman interest group was also indirectly related to openness to diversity through peer interactions. There were no indirect effects found for a traditional residence hall or a sponsored learning community on openness to diversity. The total effect of living arrangement on openness to diversity was significant for the freshman interest group, the sponsored learning community, and the traditional residence hall. The highest effect was found for the program with the greatest intensity of peer interactions. Pike speculated that this could be because positive peer interactions are a powerful predictor of student openness.

Limitations of the Pike (2002) study are that a single institution was studied, the students self-selected to participate in the survey, and the survey was conducted at one point in time. In addition, students self-selected into the living arrangement, and they did not reflect the demographics of students in the campus population. Pike suggested that the study should be replicated at other types of institutions. Finally, he suggested doing longitudinal studies in order to better define causal relationships among the variables.

In a study on the impact of various kinds of living-learning programs on intellectual development, Stassen (2003) found no differences on the environmental measure of exposure to diversity in values. In the same study, there was more exposure to

racial/ethnic diversity in the traditional residence halls than in the living-learning programs. Stassen speculated that this finding is because students in the living-learning programs are less racially diverse than students in the campus population. This study raises some questions about the potential for living-learning programs to isolate students if they are not representative of their campus populations. In fact, living-learning programs do not always create greater opportunities for interactions with diverse others. For this reason, studies on diversity outcomes of living-learning programs should examine specifically the structural elements in living-learning programs and the kinds of peer interactions that they facilitate.

Similarly, another study found a negative outcome in a living-learning program, due to inadequate structural elements (Henscheid, 1996). At a university in the Northwest, living-learning programs were created to encourage academically oriented peer interactions. The grounded theory study was prompted by a lack of evidence about specific environmental conditions that encourage peer interactions on academic topics. The researcher found that instead of promoting academic interaction, the living-learning environment was noisy and encouraged non-academic socializing. In addition, the program coursework was structured for independent study. Consequently, students did not engage in effective group studying, and recounted at the conclusion of their living-learning program experience that they were newly determined to study more effectively—alone (Henscheid).

Despite the fact that some living-learning programs are not structured for positive student outcomes, there are promising structural elements in many living-learning programs for the outcome of openness to diversity. Each of the key elements of the

Allport (1954) contact hypothesis is present in many living-learning programs. For example, many living-learning program mission statements include an emphasis on support for diversity. Thus, the work of diversity in living-learning programs is institutionally sanctioned. Students are, with respect to the program, of equal status. They are often drawn together through common interests in the living-learning program theme. They are often encouraged to work in groups, in both classroom and cocurricular activities. Finally, students are working toward a common goal of completing the program, through fulfillment of the course and living-learning program requirements. Thus, the contact hypothesis can guide examination of the diversity outcomes in living-learning programs.

Given that there are numerous different types of living-learning programs, it may be that diversity outcomes vary by program type. Although many different types of living-learning programs have been introduced over the years, the classification of living-learning programs into similar categories, or a typology, have only recently been attempted. In the first typology model, Zeller, James, and Klippenstein (2002) initially categorized living-learning programs into the following six types: residential colleges; living-learning centers; theme housing programs; academic residential programs; residential learning communities; and first year experience programs. Residential colleges are the most intensive type of program, in that classroom, faculty offices, and student residences are in the same facility. Living-learning centers are residential centers with a specific academic focus. Theme house programs group students by common interest, but may not have an academic component. Academic residential programs provide support services such as advising, tutoring, and career planning. Residential

learning communities are living-learning centers in which students take clustered courses together. Finally, first year experience programs provide coordinated opportunities for new students to transition into campus life (Zeller et al.). Although a useful model using broad categories, the Zeller et al. model was not meant to be exhaustive of all living-learning program types.

The second model approaches a more comprehensive thematic typology of existing living-learning programs and utilizes empirical data. Using the 2004 National Study of Living-Learning Programs (NSLLP) data, Inkelas, Brower, Crawford, Hummel, Pope, & Zeller (2004) organized 247 living-learning programs into 14 major types of programs: civic/social leadership; cultural; disciplinary; fine and creative arts; general academic; honors; multidisciplinary; outdoor recreation; research; residential college; transition; upper division; wellness/healthy living; and women's (see Table 1).

Five of the major program types have subtypes. The civic/social leadership type includes subtypes of civic engagement, leadership, and service learning/social justice. These subtypes all have a focus on contributing to the social good. The cultural type has subtypes of international/global, language, and multicultural/diversity. These subtypes are related by their thematic emphasis on human cultural differences. The disciplinary type has subtypes of business, education, engineering/computer science, health science, humanities, general science, and social science. Each of these subtypes is organized according to a particular academic discipline. The transition type has subtypes of new student transition and career/major exploration. These subtypes emphasize the entry into college, and its associated exploratory tasks. The women's type has subtypes of

Table 1  
NSLLP Thematic Typology of Living-Learning Programs

Major Type	# Programs (247 total)	Subtypes
1. Civic/Social Leadership	21	1. Civic Engagement 2. Leadership 3. Service Learning/Social Justice
2. Cultural	32	1. International/Global 2. Language 3. Multicultural/Diversity
3. Disciplinary	67	1. Business 2. Education 3. Engineering & Computer Science 4. Health Science 5. Humanities 6. General Science 7. Social Science
4. Fine/Creative Arts	22	
5. General Academic	7	
6. Honors	22	
7. Multi-Disciplinary	4	
8. Outdoor Recreation	2	
9. Research	2	
10. Residential College	7	
11. Transition	30	1. New Student Transition 2. Career/Major Exploration
12. Upper-Division	4	
13. Wellness/Healthy Living	9	
14. Women's	18	1. Leadership 2. Math/Science/Engineering

leadership and math/science/engineering. These subtypes tailor programming specifically for women. The total of major types and subtypes of programs is 26.

The thematic typology was created using a content analysis that sorted various types of living-learning programs into discrete groups (typologies). Common themes of the living-learning program types were derived from the content analysis. The content analysis was created by examining two dimensions of the living-learning program survey

(NSLLP-LLPS): the name of the program, and a 50-word program description. Program names often included key words, which indicated program content. Using a combination of the program name and keywords from the program description, the programs were sorted into categories using a spreadsheet. Finally, each program was manually examined for relevance to each category. After examination, some programs were moved within categories to other subcategories. Only rarely did programs cross over into other major categories after manual examination. Of 274 living-learning programs represented in the NSLLP, 247 could be categorized. Only 27 programs did not sort into categories. These programs either did not provide a description, or they were so unique that they defied categorization.

In a preliminary analysis, some of the thematic types had better student outcomes than others (Inkelas, et al., 2004). For example, in reference to the intermediate outcomes in this study, education programs (a subtype of disciplinary) and civic engagement programs (a subtype of civic/social leadership) had the highest means of all programs for civic engagement. Similarly, civic engagement and honors programs had the highest means for critical thinking. Finally, the highest means for diversity appreciation were in the upper division and civic engagement type programs (Inkelas, et al., 2004). This study will examine which types of living-learning programs reveal the highest levels of openness to diversity, the outcome of interest for this study.

### *Civic Engagement*

Little empirical research has been done to determine the civic engagement environments that contribute to student openness to diversity. Although studies on service learning and community service are promising, and are aspects of civic engagement,



there may be other college involvements that better support the development of openness to diversity. Further, the relationships among the college outcomes of civic engagement, critical thinking (both intermediate outcomes in this study), and openness to diversity need further exploration.

### *Living-Learning Programs*

Although higher education researchers are beginning to understand more about the impact of living-learning programs on college students, there are some inherent limitations in the research. Little research has been done that examines multi-institutional samples, that explores differences among types of living-learning programs, or that examines the specific diversity outcomes of living-learning programs. Because of the focus on single institution studies, living-learning research results may not be generalizeable to living-learning programs in a multi-institutional context. Thus, these studies are sporadic and study-specific, and so it is difficult to draw conclusions about the effect of living-learning programming on a broad, generalizable level.

The lack of an empirical design of living-learning program typologies is a further limitation of the living-learning program research. Typologies that currently exist are based upon broad thematic elements of programs. These thematic elements have not been researched for consistent, reliable outcomes.

A further limitation of the research on living-learning programs is that the cognitive growth outcomes are inconsistent. Although the research on liberal learning outcomes is consistent across studies, the effect of living-learning programs on cognitive growth is less clear. Some studies have not found sufficient evidence that living-learning programs alone contribute to growth in critical and complex thinking (Inkelas, et al.,

2005; Pike, 1999). Because critical thinking is a construct in this study, and an intermediate outcome, it may add to the literature about the cognitive growth contributions of living-learning programs.

### *Openness to Diversity*

Although some college environments that contribute to openness to diversity, such as peer interaction and a positive racial climate, are known (Flowers & Pascarella, 1999; Pascarella, et al., 1996; Pike, 2002; Whitt, et al., 2001) there are other influences of the college environment on openness to diversity that are not known. Because the impact of college on students is both broad and complex, continued research is needed to determine all of the environmental elements that may influence student diversity outcomes. In addition, the societal context continues to require evidence that the environment is supportive of diversity outcomes. Recent Supreme Court decisions (*Gratz v. Bollinger*, 2003; *Grutter v. Bollinger*, 2003) upheld affirmative action in colleges and universities because the environmental contributions (structural diversity) to key college outcomes were accepted. Further delineation of these environmental contributions is necessary to provide support not only for campus program design, but also to provide evidence of diversity outcomes for the broader society.

The next chapter will outline the conceptual framework and discuss the methods that will be used to test the contact hypothesis.

### Chapter 3: Research Methods

This chapter begins with the research questions and corresponding hypotheses that guide this study. Next, the constructs are identified that are used to answer the research questions, followed by a description of the variables that represent the constructs. The conceptual framework, which identifies the variables and their predicted relationship to the outcome, is reviewed, including a description of the theoretical base for the framework. The specifics of the sampling, instrumentation, and data collection for this study follow the conceptual framework. Finally, the quantitative analyses used to answer the research questions are explained.

#### *Purpose Statement and Research Questions*

This study used a college impact model to examine how living-learning programs and other college environments contributed to students' perceptions of growth in openness to diversity. More specifically, this study investigated the following three research questions:

1. Are there differences in openness to diversity among students who participate in different thematic types of living-learning programs?
2. Do various structural elements of living-learning programs tend to cluster together to form distinct types of living-learning programs? If so, do students in different clusters of living-learning programs have different levels of openness to diversity?
3. Using the conceptual framework developed for this study, how do student background characteristics, living-learning program involvement, peer interaction, involvement in critical thinking and civic engagement activities, and

participation in other college environments contribute to students' openness to diversity?

The above research questions seek to understand how living-learning programs contribute to students' perceptions of growth in openness to diversity from several different perspectives, by examining differences in students' perceptions by (a) thematic types of living-learning programs, (b) structural elements of living-learning programs, and (c) involvement in living-learning programs nested within a comprehensive conceptual model of college impact on openness to diversity.

### *Hypotheses*

Based on the literature reviewed in Chapter 2, several hypotheses were generated for this study. The hypotheses below correspond to the research questions in the order listed above.

#### *Hypothesis 1*

Some types of living-learning programs will have students with higher openness to diversity than others. These thematic types will include:

- cultural programs (multicultural/diversity, language, and international/global)
- civic/social leadership programs (civic engagement, leadership, and service learning/social justice)
- upper-division programs

Although the development of a thematic typology of living-learning programs is in a preliminary stage, a tentative thematic typology has been developed by Inkelas and colleagues (2004) as a part of the NSLLP. Through existing theory and research, themes

representing the above program types have been demonstrated to be related to openness to diversity (Astin & Sax, 1998; Colby, Ehrlich, Beaumont, & Stephens, 2003; Jones & Abes, 2004; MacPhee, Kreutzer, & Fritz, 1994; Pascarella et al., 1996; Rhoads, 1997; Whitt et al., 2001; Youniss & Yates, 1997).

The cultural type living-learning program includes the subtypes of international/global, language, and multicultural/diversity. The international/global subtype incorporates an international environment where multiple countries and nationalities are studied and celebrated; the language subtype of program focuses on the study of a specific foreign language and the history and culture of the countr(ies) that speak that language; and the multicultural/diversity subtype focuses study on domestic diversity issues, such as race/ethnicity, sexual orientation, and disability/ability. Incorporation of curricular diversity content, such as is done in each of these program subtypes, can increase students' openness to diversity (MacPhee, Kreutzer, & Fritz, 1994).

Multicultural experiences such as those offered in cultural programs have multiple empirical studies to support their inclusion in this hypothesis. Several studies have shown that multicultural experiences are associated with enhanced attitudes of openness to others (Astin & Sax, 1998; Jones & Abes, 2004; Rhoads, 1997; Youniss & Yates, 1997). Other multicultural experiences such as those provided in cultural awareness workshops predicted college student openness to diversity in prior studies (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Whitt, Edison, & Pascarella, 2001).

The civic/social leadership program type encourages active civic participation in public leadership, public service, and/or service learning. Civic engagement has been

conceptually associated with the appreciation of cultural pluralism (Colby, Ehrlich, Beaumont, & Stephens, 2003). The service learning/social justice subtype has a service learning or community service component with an emphasis on greater social responsibility among the participants. Astin and Sax (1998) found that students who participate in service learning value promoting racial understanding.

Finally, the upper division living-learning program type is for juniors and seniors. These programs include integration of cocurricular and curricular elements. The cocurricular elements can include service learning, independent research projects, entrepreneurship, and internships. In a study on openness to diversity in the third year of college, total credit hours completed positively predicted openness to diversity (Whitt et al., 2001). In addition, in these openness to diversity studies, age positively predicted greater openness to diversity in all three years of college (Pascarella et al., 1996; Whitt et al., 2001). Although age is not the same as class level, in a traditional student population such as the student population in this study, it is a close approximation. As students progress through college, they develop into more reflective and open-minded thinkers (Baxter-Magolda, 2001; Chickering & Reisser, 1993; King, 2000; Perry, 1981). Finally, although age is not an effect of living-learning programs, when all students live together who are older, the living-learning program can have the effect of enhancing the older student peer effect.

### *Hypothesis 2*

Living-learning programs will cluster into distinct types based on common structural elements. Structural elements of programs that may enable the clustering of types include the size of the program, the program's budgeting and reporting

relationships, and the resources and activities offered by the program. In addition, there will be differences in student openness to diversity by cluster type. Types that will be significantly greater in openness to diversity will be small-to-medium sized programs in which: (a) students live together on one residence hall; (b) take courses for credit offered by the living-learning program; and (c) have access to resources and activities designed for peer interaction.

The cluster typology is exploratory because there is no previous empirical research on living-learning program typologies. However, it is possible to hypothesize about cluster differences in openness to diversity based upon this study's theoretical foundation. Living-learning programs that are smaller and that require students to live together on one residence hall conform to Newcomb's (1962) propinquity concept in the model of peer influence. Programs that offer courses for credit reflect the institutional support component of the contact hypothesis (Allport, 1954). Finally, programs that have resources and activities structured for peer interaction enhance the conditions of the contact hypothesis, in which equal status peers in meaningful relationships are working together, often on common goals (Allport).

### *Hypothesis 3*

College student perceptions of growth in openness to diversity will be significantly predicted by demographic characteristics (race/ethnicity and gender), pre-college importance of diversity activities, and key college environments that support: critical thinking, peer interaction, civic engagement, and cultural engagement (ethnic clubs). Growth in openness to diversity will also be significantly predicted by perceptions of the residence hall climate and the overall campus racial climate. Finally, growth in

openness to diversity will be predicted by living-learning programs that house students together on the same residence hall, have involvement of undergraduate students in the program, and offer program activities that enhance a positive sense of community (cultural outings, group projects, study groups, service learning, and team building).

Most of the constructs above (race/ethnicity, gender, critical thinking, peer interaction, and campus racial climate) have been identified in prior research to be significant predictors of openness to diversity (Pascarella et al., 1996; Whitt et al., 2001). Although ethnic clubs, civic engagement, and residence hall climate were not constructs included in the Pascarella et al. and Whitt et al. studies on openness to diversity, other research indicates that these elements may also be significant predictors of openness to diversity. Participation in ethnic clubs is associated with greater interracial interaction (Hurtado, Dey, & Treviño, 1994). Community service is a part of the civic engagement construct. Community service can have elements of the contact hypothesis (peers working together to pursue a common goal, with institutional support); moreover, prior research indicates that community service is associated with attitudes of openness (Astin, Sax, & Avalos, 1999; Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001). Residence hall climate is included because studies of residence hall environments indicate that positive residence hall climates are predictive of growth in attitudes of openness to others (Inkelas, Johnson, Lee, Daver, Longerbeam, & Vogt, 2005; Inkelas & Weisman, 2003).

Peer interaction has both a theoretical and an empirical rationale for inclusion as a construct in this study. The influence of peers is the core element of both the contact hypothesis (Allport, 1954) and the Newcomb (1962) model of peer influence. The propinquity of the contact in residential settings makes it even more prime for contact to



effect attitudinal change. And, nearly all living-learning programs emphasize peer interaction as a part of their programming (Shapiro & Levine, 1999).

The living-learning program elements that enhance peer propinquity through the configuration of the residence halls and undergraduate roles are consistent with the Newcomb (1962) model of peer influence. Community building activities are associated in prior research with enhanced student growth (Astin, Sax, & Avalos, 1999; Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001; MacPhee, Kreutzer, & Fritz, 1994).

### *Conceptual Framework*

The conceptual framework for this study draws upon the college impact models of Astin (1991), Newcomb (1962), and Pascarella et al. (1996). The models are undergirded by the contact hypothesis (Allport, 1954), which is the theoretical base drawn from the discipline of sociology. Constructs chosen were either statistically significant in predicting openness to diversity in prior research, and/or were included due to their salience in the core theory or conceptual models. The constructs are organized in the model based upon prior research (Newcomb, 1962; Pascarella et al., 1996) and on stipulations of the IEO conceptual model (Astin, 1991). Constructs are thus ordered in the following pattern (Astin, 1991): the input measures of student background characteristics and the pretest of precollege importance of diversity activities; the environment measures (from distal to proximal influences) of campus racial climate, residence hall climate, academic involvement, faculty interaction, co-curricular involvement, peer interaction, and living-learning program elements; and finally, the intermediate outcome measures of critical thinking and civic engagement. The Pascarella et al. (1996) conceptual model for openness to diversity and challenge determines the order of the blocks. An exception is

the inclusion of the living-learning program characteristics, a unique contribution of this study. This study tested the direct relationships among these constructs and the outcome measure, openness to diversity. The conceptual model is depicted in Figure 1.

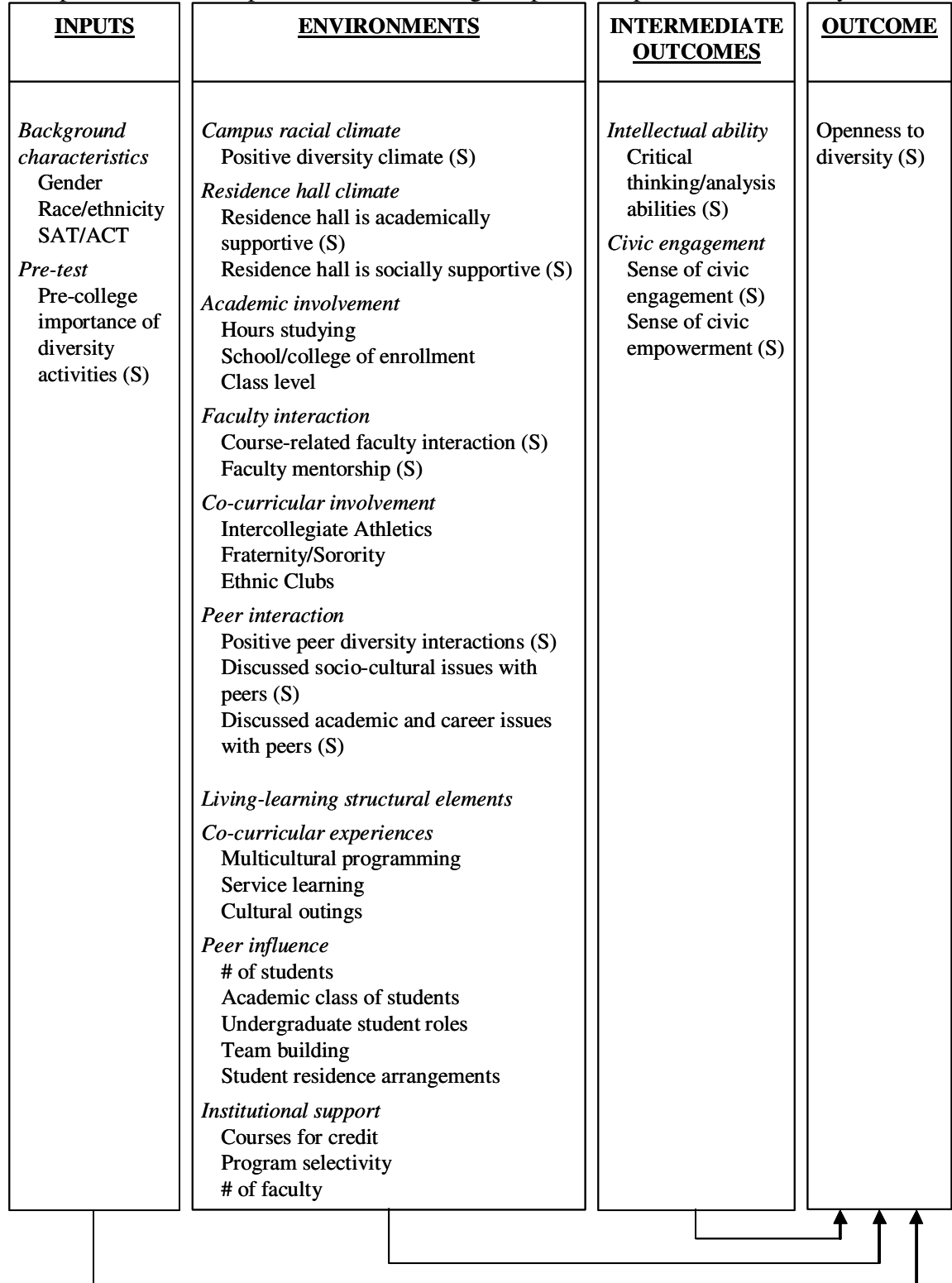
The IEO model was developed by Astin (1991) in the 1960s through his work on the quality of graduate education. He found that the quality of outputs (the number of PhDs awarded at each institution) was mostly influenced by the quality of the inputs (the ability of the entering graduate students). These studies, conducted in the early 1960s, taught Astin three lessons about assessment:

1. The output of a program does not measure its educational impact. Instead, output must always be measured in terms of the quality of the input.
2. Output is not measured by a single input; many variables must be considered.
3. Specific information on the environment is needed. What particular aspects of the environment contribute the most to the final outcome? (Astin, 1991, pp. 17–18)

The Astin (1991) IEO model is concerned with assessing the impact of the college environment on student outcomes, by controlling for as many confounding inputs as possible. In an attempt to use caution in overemphasizing the effect of one outcome on another, Astin prefers the term correlational to causal. It is important to control for inputs in order to minimize error in assessing the impact of the college environment on the outcome. There is also a risk of confounding the effects of the environment with the outcome, because student perceptions of the environment can be influenced by their outcome. Thus, it can be difficult to know the direction of influence: that is, does the environment cause the outcome, or does the outcome influence the environment?

Figure 1

## Comprehensive Conceptual Model of College Impact on Openness to Diversity



Note: (S) indicates scale measure

For example, in this study, does civic engagement, an environment construct, influence openness to diversity, or does openness to diversity influence civic engagement? One way to minimize the error of direction is to include information in the data set from the institution (as in this study through the use of the living-learning program surveys). Information about elements in the environment that encourage civic engagement is available in the living-learning program survey, and is incorporated into the data set.

Student background characteristics are included that have a significant relationship to openness to diversity. The pretest measure is presumed to be more highly correlated with the outcome than any other measure. The environment and intermediate outcome measures are chosen to maximize the explanation of the association with openness to diversity. Finally, the outcome measure is self-reported, but self-predictions can be very accurate in correctly predicting outcomes of all kinds (Astin, 1991).

#### *Operationalization of Variables Derived from Theory*

The constructs in the conceptual framework were operationalized for this quantitative study in ways that are consistent with prior research. This section describes the variables used in this study, which are described in the order of their placement in the conceptual framework.

All scales were created using exploratory factor analysis and Cronbach alpha reliability tests. The specific factor loadings for each item in each scale in this study are located in Appendix C. The only scale created specifically for this study was the openness to diversity scale. For the other scales, factor analysis was run by item set, and these item sets were organized around distinct constructs. All scales were created using

NSLLP pilot data collected in 2003 (except the importance of diversity activities, civic engagement, civic empowerment, and openness to diversity scales which were created with 2004 NSLLP-RES data). The pilot data collection is described in more detail under the section “instrumentation.” There were a total of nine factor analyses completed for this study, with an average of 18 individual items within each item set. All scores on the scales, in addition to those initially created with the 2003 pilot data, were tested for reliability using Cronbach alpha with the 2004 NSLLP-RES data.

### *Inputs*

Student background characteristics include gender, race/ethnicity, and SAT/ACT scores. The openness to diversity studies of Pascarella et al. (1996) and Whitt et al. (2001) found that women and students of color were more open to diversity and challenge than men and White students. Similar results were found in the studies on universal diverse orientation (Miville, Gelso, Pannu, Liu, Touradji, Holloway, et al., 1999).

SAT/ACT scores are proxy measures for high school achievement; although another measure was used in the Pascarella et al. (1996) and Whitt et al. (2001) studies (a standardized test of academic achievement), the SAT/ACT scores are widely accepted as measures of high school achievement (Sedlacek, 2004). The background characteristics are outlined in Table 2.

The input entered last in the conceptual model is the pretest on the “importance of diversity activities.” This measure is important because it indicates the degree to which students’ predisposition to diversity influences the outcome. The pretest attempts to control for how the outcome is influenced by the students’ inclination to be open to

Table 2  
Descriptions of Background Characteristics

Variable	Coding
Gender	1=Male 2=Female
Race	African American/Black (1=no, 2=yes) Asian or Pacific Islander (1=no, 2=yes) American Indian or Alaskan Native (1=no, 2=yes) (referent) Hispanic/Latino (1=no, 2=yes) White/Caucasian (1=no, 2=yes) Multi-racial or multi-ethnic (1=no, 2=yes)
SAT/ACT (Combined into one variable)	SAT: Continuous measure from 500–1600 ACT: Continuous measure from 1–50

diversity at the time of college matriculation. A limitation of the pretest is that the study is cross-sectional in design, and so the pretest questions were asked at the same time as the other measures on the same instrument, including the dependent variable. The preface to the questions asked the students to reflect back to before they started college. The questions were asked in the beginning of the survey, with the intent to limit biases that may have been present by answering them after questions about the college experience. Pretest questions used in this manner are not ideal, but are acceptable as substitute measures (Pascarella, 2001).

The pretest measure is a composite measure. The scale measure was created through data reduction techniques. Principal axis factor analysis with varimax rotation by means of communalities was the statistical method, using distinct factors with Eigenvalues greater than one. Factor analysis was performed on an independent data set, the 2003 NSLLP pilot data. This data reduction method was used for each of the input and environment scales in this study. The resulting factor ( $\alpha=.884$ ) is composed of the

following items, which asked students to reflect back to the importance students assigned to the following activities right before they started college:

- Learning about cultures different from your own
- Getting to know people from backgrounds different than your own

### *Environments*

The environment measure of “positive diversity climate” is a composite measure for the construct of students’ perceptions of the campus racial climate. The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.812$ ) is composed of the following items, on the extent to which each is descriptive of the college campus:

- Interaction between students of color and White students
- Friendship between students of color and White students
- Trust and respect between students from different racial/ethnic backgrounds
- Campus commitment to develop an environment that is conducive to the success of students of color
- Dating between students of color and White students on campus
- Respect by White professors for students of color

Perceptions of the campus climate for diversity have been indicated, through numerous studies, to have an influence upon student attitudes toward diversity. First, the openness to diversity studies found a significant effect of the campus racial climate in all three years of college (Pascarella et al., 1996; Whitt et al., 2001). Next, the campus racial climate has generally predicted student attitudes toward diversity in other studies (Gurin, 1999; Hurtado, 1992).

The construct of residence hall climate is represented in the conceptual framework by two composite scales, one that represents a measure of academic support in residence halls, and another that represents a measure of social support in residence halls. The academic support in residence halls scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.808$ ) is composed of the following items, on how well each is descriptive of the residence hall environment:

- My residence environment clearly supports my academic achievement
- Most students in my residence environment study a lot
- I think the majority of students in my residence environment think academic success is important
- I think it's easy for students to form study groups in my residence environment
- I can find adequate quiet study space available in my residence environment
- I think the staff in my residence environment spend a great deal of time helping students succeed academically

The second composite measure for the residence hall climate is social support in residence halls. The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.868$ ) is composed of the following items, on how well each is descriptive of the residence hall environment:

- I find that students in my residence environment have an appreciation for people from different races or ethnic groups



- I find that students in my residence environment have an appreciation for people from different religions
- Students in my residence environment are concerned with helping and supporting one another
- I would recommend this residence environment to a friend
- Life in my residence environment is intellectually stimulating
- I see students with different backgrounds having a lot of interaction with one another in my residence environment
- I find that students in my residence environment have an appreciation for people with different sexual orientations
- I have enough peer support in my residence environment to do well academically

Residence hall climate measures are included in this study because they have been shown to predict aspects of liberal learning, which includes openness to other views (Inkelas & Weisman, 2003). In addition, a positive overall campus climate (which includes residence hall climate) contributes to greater openness to difference (Hurtado, 1992).

There are three measures for the construct of academic involvement: hours studying, school of enrollment, and class level. The academic involvement measures are outlined in Table 3.

The number of hours students spent studying in the first year of college has been significantly related to openness to diversity in previous research (Pascarella et al., 1996). School/college of enrollment (e.g., School of Engineering) is included because major

Table 3  
Descriptions of Academic and Co-Curricular Involvement

Variables	Coding
Hours Studying Per Week	1=none 2=1–5 hrs 3=6–10 hrs 4=11–15 hrs 5=16–20 hrs 6=21+ hrs
School/College	Soft pure school (1=no; 2=yes) Soft applied school (1=no; 2=yes) Hard pure school (1=no; 2=yes) Hard applied school (1=no; 2=yes)
Class Level	1=first year 2=sophomore 3=junior 4=senior 5=graduate student
Intercollegiate Athletics	1=not at all involved 2=somewhat involved 3=involved 4=very involved
Fraternity/Sorority	1=not at all involved 2=somewhat involved 3=involved 4=very involved
Ethnic Clubs	1=not at all involved 2=somewhat involved 3=involved 4=very involved

field of study is not available in this data set. Major field of study has been related to student attitudes in many studies (Astin, 1993; Pascarella et al., 1996; Whitt et al., 2001). Pascarella et al. and Whitt et al. studies found that math courses negatively predicted openness to diversity in all three years of the study; an arts and humanities courses positively predicted openness to diversity in the third year (Pascarella et al., 1996; Whitt et al., 2001). Astin (1993) found that attitudes of liberalism were positively associated

with taking women's and ethnic studies courses, and negatively associated with taking mathematics courses. Although school/college is not a perfect proxy for major, it is used to approximate the subject coursework that students are exposed to in the curriculum. The school/college of enrollment varied across the 34 institutions in this study. The school was recoded to match the four categories of fields in the Biglan (1973) typology, in order to make them consistent. The categories are: soft pure (arts, humanities, and social sciences); soft applied (education, economics, business, journalism, and architecture); hard pure (biological science and physical science); and hard applied (engineering and health). Although both age and class level were included in the Pascarella et al. and Whitt et al. studies on openness to diversity, only class level was asked as a survey question on the instrument used for this study. Class level, however, can be a better predictor of student development than age: "although educational level is frequently confounded with age in studies of college student development, education has been found to be a more powerful predictor than age alone" (King & Shuford, 1996, p. 158). Age was a significant predictor of openness to diversity in all three years of the openness to diversity studies (Pascarella et al., 1996; Whitt, et al., 2001).

The construct of faculty interaction is represented in the conceptual framework by two composite scales, one that represents course-related types of interactions and one that captures more sustained and close types of relationships, more akin to faculty mentoring activities. "Course related faculty interaction" was created through data reduction techniques. The resulting factor ( $\alpha=.767$ ) is composed of the following items, on how often students have done each during the current school year:

- Visited informally with an instructor before or after class

- Made an appointment or met with an instructor in his/her office
- Asked your instructor for information related to a course you were taking
- Communicated with your instructor using e-mail

The second composite measure is “faculty mentorship.” The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.746$ ) is composed of the following items, on how often students have done each during the current school year:

- Worked with an instructor on an independent project
- Worked with an instructor involving his/her research
- Discussed personal problems or concerns with an instructor
- Visited informally with an instructor during a social occasion
- Went to a cultural event with an instructor or class
- Discussed your career plans and ambitions with an instructor

In a meta analysis of college impact, faculty interaction had a modest effect on student attitudes (Pascarella & Terenzini, 1991). More specifically, in the Astin (1993) study, talking with faculty was negatively affected by the belief that individuals can do little to change society. Faculty interaction also had a significant effect in the third year of studies on student openness to diversity (Whitt, et al., 2001).

There are three measures for the construct of co-curricular involvement: intercollegiate athletics, fraternity/sorority membership, and ethnic clubs. These three particular co-curricular activities were chosen because of their empirical relationships to openness to diversity. The co-curricular involvement measures are outlined in Table 3, above.

Intercollegiate athletics and fraternity and sorority membership were significant predictors (both negative and positive) of openness to diversity in several studies (Flowers & Pascarella, 1999; Pascarella et al., 1996; Whitt, et al., 2001). Participation in ethnic clubs has been associated with greater commitment to racial groups and stronger racial awareness (Inkelas, 2004). Other studies have found that students who participate in ethnic clubs are more likely to interact across race (Hurtado, et al., 1994).

The construct of peer interaction is represented in the conceptual framework by three composite scales, one that represents positive peer interactions related to racial diversity, a second that represents peer interactions on social and cultural issues, and a third that represents peer interactions on academic and career issues. The “positive peer diversity interactions” scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.898$ ) is composed of the following items, related to the extent to which students have done the following with peers from a racial/ethnic group different than their own:

- Studied together
- Shared a meal together
- Were roommates
- Attended social events together
- Had intellectual discussions out of class
- Dated someone
- Shared personal feelings and problems
- Participated in extracurricular activities together
- Had meaningful discussions about race relations outside of class

The second composite measure for the construct of peer interaction is “discussed socio-cultural issues with peers.” The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.864$ ) is composed of the following items, on how often during the current academic year students have done each during interactions with other students outside of class:

- Discussed major social issues such as peace, human rights, and justice
- Held discussions with students whose personal values were very different from your own
- Discussed your views about multiculturalism and diversity
- Held discussions with students whose religious beliefs were very different from your own
- Talked about different lifestyles/customs
- Held discussions with students whose political opinions were very different from your own

The third composite measure for the construct of peer interaction is “discussed academic and career issues with peers.” The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.737$ ) is composed of the following items, on how often during the current academic year students have done each during interactions with other students outside of class:

- Discussed something learned in class
- Talked about current news events
- Shared your concern about classes and assignments
- Talked about your future plans and career ambitions

Peer interaction has strong effects on student attitudes in general, and on openness to diversity in particular. In one study on openness to diversity, the strongest effect on openness to diversity was found for the living-learning program with the most peer interaction (Pike, 1999). Peer interaction was significant in all three years of college in studies on openness to diversity (Pascarella et al., 1996; Whitt, et al., 2001).

Peer interaction is also the core element in both the contact hypothesis (Allport, 1954) and the conceptual model of peer influence (Newcomb, 1962). Finally, the influence of peers is identified as the strongest influence of all college effects in a meta analysis of college impact (Astin, 1993).

### *Intermediate Outcomes*

Intermediate outcomes are defined by Astin (1991) as outcome measures that also have the effect of influencing other outcomes. Intermediate outcomes allow the researcher to understand the contributions of aspects of the college environment that are both influenced by other environments but also can influence the ultimate dependent variable. In this study, critical thinking and civic engagement are both outcomes of the college environment, and are themselves environments that ultimately may influence the development of openness to diversity.

### *Critical thinking and analysis.*

The intermediate outcome variables are represented by composite measures. The first construct is “critical thinking and analysis abilities.” The scale measure was created through data reduction techniques. The resulting factor ( $\alpha=.707$ ) is composed of the following items, on the level to which students agree with the following statements:

- I try to explore the meaning and interpretations of the facts when I am introduced to a new idea
- There have been times when I have disagreed with the author of a book or article that I was reading
- I frequently question or challenge professors' statements and ideas before I accept them as "right"
- A good way to develop my own opinions is to critically analyze the strengths and limitations of different points of view
- I enjoy discussing issues with people who don't agree with me
- I prefer courses requiring me to organize and interpret ideas over courses that ask me only to remember facts or information

Critical thinking is associated in the theoretical literature with increases in open-mindedness (Kuhn, 1991). An environmental emphasis on critical thinking was significant in the second year of studies on openness to diversity (Whitt, et al., 2001).

The second intermediate outcome construct is civic engagement. This construct is represented by two composite measures in the conceptual model, "sense of civic engagement," and "sense of civic empowerment." The scale measures were created through data reduction techniques. The resulting factors ( $\alpha=.918$ ) and ( $\alpha=.758$ ) respectively, are composed of the following items, on the level to which students agree or disagree with the following items:

*Sense of civic engagement.*

- I volunteer my time to the community
- I work with others to make my communities better places



- It is important to me that I play an active role in my communities
- I believe my work has a greater purpose for the larger community
- I value opportunities that allow me to contribute to my community
- I participate in activities that contribute to the common good
- I give time to making a difference for someone else
- I understand the extent to which the groups I participate in contribute to the larger community
- I believe I have responsibilities to my community
- I believe I have a civic responsibility to the greater public

*Sense of civic empowerment.*

- Ordinary people can make a difference in their community
- I have the power to make a difference in my community
- There is little I can do that makes a difference for others (reverse coded)
- I am willing to act for the rights of others

Civic engagement is supported in this model because those who are civically engaged are likely to be involved in situations that encompass the elements of the contact hypothesis. Participants are likely to be engaged with others in equal status relationships working toward common goals in an environment of institutional support (Allport, 1954).

Research studies on civic engagement have linked a sense of both civic empowerment and associated feelings of empowerment with openness to others (Astin & Sax, 1998; Astin, Sax, & Avalos, 1999).

*Outcome: Openness to Diversity*

The outcome construct, openness to diversity, is a composite measure. The composite measure is composed of the following items, with the preface, to what extent students feel they have grown in the following areas:

- Becoming more aware of different philosophies, lifestyles, and cultures
- Developing your own values and ethical standards
- Improving your ability to get along with people different than yourself
- Appreciation of racial/ethnic differences
- Openness to views that you oppose
- Ability to discuss controversial issues

The scale closely replicates the scale “openness to diversity and challenge” in the Pascarella et al. (1996) study. Openness to diversity is defined as the awareness and appreciation of other ideas and values, and of racial and cultural differences. The scale was created by performing a principal axis factor analysis on the construct in the NSLLP-Residence Environment Survey (NSLLP-RES) that most closely replicated the items in the openness to diversity scale in the Pascarella et al. study. The scale for this study does not have the challenge item from the Pascarella et al. scale, which was: “I enjoy courses that are intellectually challenging.” The remaining items in the openness to diversity scale very closely approximate the scale used in the Pascarella et al. study. However, this omission may make the openness to diversity scale for this study more faithful to receptiveness to diversity instead of other intellectual concerns. The scale had a Cronbach alpha reliability .830.

### *Sample*

The National Study of Living-Learning Programs (NSLLP), a collaborative research project by faculty, administrators, and students from four universities, compiled the data for this study. The sample utilized for this study includes students participating in living-learning programs. A comparable comparison group of students living in a residence hall but not participating in living-learning programs was also collected as a part of the data collection, but was not used in this study because each research question in this study addressed only the living-learning sample, and not the comparison sample. Living-learning programs were defined as programs in which students live together in a residence hall and participate in academic or co-curricular programs designed especially for them.

Universities were solicited through presentations given at several national conferences and individual contacts at selected universities with known living-learning programs. Thirty-four universities chose to participate, encompassing 274 living-learning programs. The institutions represented a range of Carnegie classifications (Liberal Arts, Masters Comprehensive and Research Extensive) and regions in the United States (West, Midwest, East, and South). However, the sample is skewed toward large research universities, and institutions in the U.S. East and Midwest regions are more heavily represented than those in the U.S. West and South.

### *Data Collection*

The NSLLP Residence Environment Survey evolved through two previous data collections: pilot tests of the survey were conducted in 2002 and 2003. After each administration of the pilot survey, items were revised for clarity. Data were collected for

this study through a web-based survey administration of the final instrument, the NSLLP Residence Environment Survey (NSLLP-RES). The survey administration occurred over a period of five weeks during the spring semester of 2004. This study uses selected measures from the NSLLP-RES. MSIResearch, a commercial web survey firm, was contracted to set up the web-based survey administration, email requests for participation to respondents, and collect the data. Most institutions chose to select a sample of living-learning students, although a few smaller schools chose a census of all living-learning students. As much as possible, equivalent sized comparison groups were selected that matched, as best as possible, the gender, racial/ethnic, academic class standing and residence location characteristic of their respective living-learning sample.

All surveys began in at least the third week of the semester at each institution, and all surveys were completed prior to spring break. Each potential respondent was contacted via email and instructed to log onto a web site using a unique survey identification number. The identification number allowed the respondents to return to the site to finish incomplete surveys. Up to three reminders were sent to each non-respondent. Most universities used incentives such as gift certificates to enhance response rates. Response rates are provided in Table 4.

**Table 4**  
**Overall Responses for the National Study of Living-Learning Programs**

<b>Sample</b>	<b>Sample Size</b>	<b>Total Responses</b>	<b>Response Rate</b>
Living-Learning Sample <sup>a</sup>	33,562	12,241	36.47%
Comparison Sample	38,166	11,669	30.57%
Total	71,728	23,910	33.33%

<sup>a</sup> Sample utilized for this study

## *Instrumentation*

### *Rationale for Instrument*

The primary instrument used is the National Study of Living-Learning Programs Residence Environment Survey (NSLLP-RES). It was pilot tested over a period of two years prior to the 2004 survey administration. It consists of 258 Likert type questions in 40 item sets, plus five to ten custom questions for each institution.

Another instrument used in this study is the NSLLP Living-Learning Programs Survey (NSLLP-LLPS), a supplemental survey that was given to the primary contact at each participating school. It provides information on each living-learning program's structural characteristics, such as the number of students in the program, faculty and staff roles in the program, and optional and required program activities. The data from the NSLLP-LLPS were manually merged into the larger data set, the NSLLP-RES. The combined data set is the NSLLP-RES/LLPS.

### *Reliability and Validity of Instrument*

The NSLLP-RES was pilot tested in 2002 at one research extensive university, and in 2003 at four research extensive universities. Reliability and validity of scores on the instrument were determined over a period of two years using two survey administrations (2003 and 2004).

### *Reliability*

The first evidence of score reliability is in the use of scales rather than single items. Composite measures are more reliable indicators of constructs than are single measures (de Vaus, 1995). The internal consistency of all scales was confirmed using exploratory factor analysis and Cronbach alpha reliability testing. The internal

consistency of the scores on the scales ranged from .623 to .898 in the 2003 pilot administration, and from .624 to .918 in the 2004 administration. When scales were created, items that were expected to create scales were tested together. When items with factor loadings less than .4 occurred, they were removed from the scale (Pallant, 2001).

Consistency across samples is an additional test of scale reliability. Generally, there was consistency when scale alphas were conducted on the data at each of four different pilot institutions (Vogt, Longerbeam, Inkelas, & Casper, 2005). In no scales used in this study did the alpha change at each school in the 2003 pilot survey by more than .18. In addition, when scales were rerun for each school to test for consistency, the Cronbach alpha never dropped below .6 for the scales used in this study (Vogt et al.).

### *Validity*

Content validity of the scores on the items was determined through review of the questions by 15 living-learning program administrators before the 2003 pilot survey administration, as well as by a focus group of students at one research university who examined the instrument for clarity. Before and after each of the first two survey administrations, the questions were revised for clarity. Also, two researchers skilled in survey methodology reviewed the item sets designed to produce scales.

Construct validity was determined in three different ways. First, factor analysis revealed that the scales from item sets were created in ways that were predicted when the researchers designed the instrument.

Second, construct validity was substantiated through a determination of similarities within construct themes, and dissimilarities across construct themes. These relationships were consistent with theoretical expectations. For example, there were

strong correlations across two of the scales in the peer interaction construct. “Discussed socio-cultural issues with peers” and “Discussed academic and career issues with peers” had a correlation of .60. This high correlation is expected, given research that links the effect of peer interaction, regardless of the content of the interaction (Astin, 1993). Similarly, there is a weak correlation across two of the scales where there is no expected relationship based upon prior literature. For example, a low correlation was found between the scales “physical consequences of alcohol use” (a scale not included in this study) and “discussed socio-cultural issues with peers” ( $r = -.04$ ).

Third, construct validity was determined through a study of group differences. Groups that were compared included: living-learning and comparison groups, and groups by race and gender. Statistically significant differences among different types of living-learning programs were found in 25 of 28 scales; and statistically significant differences between living-learning and traditional residence hall programs were found in 16 of the 28 scales. Scores on scales significantly differed by race and gender, consistent with prior research. For example, “diversity appreciation” (a measure similar to the “openness to diversity” measure) differed significantly by gender and race (Pascarella, et al., 1996).

### *Limitations*

There are two primary limitations of the instrument and data collection: it involves cross-sectional data, and it generates self-reported data.

This study uses a cross sectional survey design. Variables in the research questions are measured at one point in time, so the results are limited by the lack of a longitudinal data collection. The lack of longitudinal data affects the rigor of the study. As research question three is now designed, there are two limitations: the pretest

questions are a limited proxy for openness to diversity, since students are asked to think back to their attitude at the time they entered college. Although there is some precedent for the use of pretest questions using this cross-sectional strategy, it is not an ideal measure of openness to diversity prior to the experience of the college environment (Pascarella, 2001). Ideally, students would have been asked about their openness to diversity at the time they entered college, using a longitudinal research design.

There is also some question about the reliability and validity of the use of the pretest in this manner. However, the scores on the pretest scale for importance of diversity activities have a high reliability ( $\alpha=.884$ ), and internal validity of the outcome results is enhanced with the use of several other student background characteristics as controls (Pascarella, 2001).

Another potential limitation of the instrument is that the scores on many of the constructs are self-reported. A standardized test of openness to diversity and standardized tests of the other composite measures might be a better objective measure of openness to diversity, civic engagement, critical thinking, and other constructs. However, as Pascarella (2001) indicates, self-reported outcomes do have a positive correlation with objective measures.

Although less a limitation than the previous two, the response rate of 33% could be a concern, in that it may not be representative of the selected sample (all partial responses were recorded). Further, it was not possible to do a comparison of the obtained sample with the selected sample.



### *Overview of Analytical Methods*

Several statistical methods are employed to answer the research questions and test the hypotheses in this study. The analyses described in this section are the following: data preparation, descriptive analyses, ANOVA, cluster analyses, and multiple regression analyses.

#### *Data Preparation*

Several elements of data preparation were followed prior to data analyses. All errors in the data (scores that ranged beyond the specified range) were recoded to system missing. Factor scales were created to reduce the data into composite measures. All data reduction used principal axis factor analysis with varimax rotation as the statistical method, using distinct factors with Eigenvalues greater than one. Finally, the two data sets (the NSLLP-RES and the NSLLP-LLPS) were manually merged into one large data

Table 5  
Research Questions and Corresponding Methodologies

Research Question	Statistical Analysis	Purpose of Analysis	Source of Data
1. Do L/L programs with varying themes differ in openness to diversity?	ANOVA	Find differences in openness to diversity by thematic L/L program typology	Residence Environment Survey (NSLLP-RES)
2a. Do L/L programs cluster together through common structural elements of the programs?	Cluster analysis	Create clusters of L/L program types based on common structural elements	Living-Learning Program Survey (NSLLP-LLPS)
2b. Do students in different L/L program clusters vary in openness to diversity?	ANOVA	Determine differences in openness to diversity by cluster group	Residence Environment Survey and Living-Learning Program Survey (NSLLP-RES/LLPS)
3. How do student background characteristics, L/L program and other college environments contribute to students' openness to diversity?	Hierarchical ordinary least squares regression analysis	Determine living-learning and other college environments on openness to diversity	Residence Environment Survey and Living-Learning Program Survey (NSLLP-RES/LLPS)

set, the NSLLP-RES/LLPS. Data analysis was conducted on both data sets (Table 5). The analysis for research question one was conducted on the NSLLP-RES; the analysis for research question two was conducted on both the NSLLP-LLPS and the merged data set, the NSLLP-RES/LLPS; and the data analysis for research question three was conducted on the merged data set, the NSLLP-RES/LLPS.

### *Descriptive Analyses*

Significant differences were explored between gender and race/ethnicity and openness to diversity.

### *Thematic Living-Learning Program Typology*

Analysis of variance was conducted to answer the first research question: Are there differences in openness to diversity among students who participate in different thematic types of living-learning programs?

A thematic typology was developed on the living-learning programs in this dataset (described in Chapter 2). A one-way analysis of variance was then conducted by thematic types of living-learning programs, with particular attention to three types (civic/social leadership, cultural, and upper-division) on openness to diversity.

### *Cluster Analysis*

Cluster analysis was used to answer the second research question: Do various structural elements of living-learning programs tend to cluster together to form distinct types of living-learning programs? Cluster analysis is a data classification technique that combines variables into similar groups by common characteristics, and separates variables into discrete groups by dissimilar characteristics. Cluster analysis is a form of data classification (Norusis, 1990). This multivariate method is primarily exploratory,

making it suitable for the classification of living-learning programs, since there is no prior research on the empirical classification of living-learning programs (Inkelas et al., 2004). A second part of the analysis of research question #2 used ANOVA to look for differences in openness to diversity by the cluster types that were derived from the cluster analysis.

The data utilized for the initial cluster analysis was the NSLLP Living-Learning Programs Survey (LLPS), which was completed by residence life or living-learning administrative contacts at the 34 institutions in the study. Cluster analysis was used to establish patterns in types of living-learning programs based upon structural characteristics of those programs. Cluster solutions are strongly determined by the variables entered when the cluster analysis is designed. (Hair & Black, 2000). The selection of variables to include in the analysis was made based upon the importance of the variable to the general goals of living-learning programs (Lenning & Ebberts, 1999; Shapiro & Levine, 1999). For example, the variable in the cluster analysis representing where students live was chosen because a core aspect of living-learning programs is the living and residential life experience. Budgeting and reporting sources, another variable entered in the cluster analysis, identified where the primary identity and support of the programs was located within the campus community (e.g., academic affairs or student affairs). The variable “number of courses offered” captured the extent to which formal classroom learning components were incorporated into the living-learning experience. The variable “number of faculty involved with the living-learning program” was chosen because faculty inclusion in the learning experience of students is one of the main goals of living-learning programs (Shapiro & Levine). The variables for undergraduate roles

identify the extent of undergraduate peer involvement in the program. The variables for the types of resources and activities offered by the program define the level of institutional support available, and the nature of student co-curricular experiences. For example, the presence of study space and faculty offices may be an indication of support for student academic success. Community service and service learning are components that bridge the formal and informal student learning experience. Group activities, group study, multicultural programming, and team building are activities that may contribute to creating a supportive peer learning environment (Astin, Sax, & Avalos, 1999; Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001; MacPhee, Kreutzer, & Fritz, 1994).

The cluster analysis used was a two-step method, useful as an exploratory tool when there are both continuous and categorical measures. This procedure places a multinomial-normal distribution on each categorical and continuous variable (SPSS v. 11.5). Categorical and continuous variables were entered separately, and continuous variables were standardized.

### *Multiple Regression Analyses*

The third research question, “what student background characteristics, living-learning program, and other college environments contribute to college students’ openness to diversity?,” was answered using hierarchical ordinary least squares regression analysis. Multiple linear regression is an appropriate methodology when researchers are not looking for exact causation, but rather for predictive relationships between several independent variables and a dependent variable (Lewis-Beck, 1980). Each of the independent variables was regressed on the dependent variable to test for direct relationships between the independent variable and the outcome variable.

Each of the measures was placed into conceptual blocks. Using regression in this way, it is possible to observe how either individual variables or blocks of variables affect the dependent variable. The blocked regression analyses were designed to answer the question of what student background characteristics and college environments influence their openness to diversity. Changes in percent variance explained appear with each new block added to the equation. The blocks entered into the regression equation conform to the study's conceptual framework and are the following:

Block 1: *Background characteristics*: gender; race/ethnicity; SAT/ACT score

Block 2: *Pre-test*: pre-college importance of diversity activities

Block 3: *Campus climate*: positive diversity climate

Block 4: *Residence hall climate*: residence hall climate academically supportive;  
residence hall climate socially supportive

Block 5: *Academic involvement*: hours studying; school/college; class level

Block 6: *Faculty interaction*: course-related faculty interaction; faculty mentorship

Block 7: *Co-curricular involvement*: involvement in intercollegiate athletics;  
fraternity/sorority involvement; ethnic clubs;

Block 8: *Peer interaction*: positive peer diversity interactions; discussed socio-cultural issues with peers; discussed academic and career issues with peers

Block 9: *Living-learning program structural characteristics* multicultural experiences (service learning, multicultural programming, and cultural outings); peer influence (# of students in program; academic class of all students in the living-learning program, undergraduate student roles, team building, and

student residence arrangement); and institutional support (program selectivity, # of faculty, courses for credit).

Block 10: *Intellectual ability*: critical thinking

Block 11: *Civic engagement*: sense of civic engagement; sense of civic empowerment

The order of the blocks is determined by the Astin (1991) IEO model distal-to-proximal criteria: elements of the college experience that exhibit influence in a more distant manner, such as campus climate, are entered before those with a closer, more proximal influence, such as peer interaction. The Pascarella et al. (1996) conceptual model for openness to diversity and challenge is similar to the conceptual model in this study: blocks are distal to proximal from institutional environment, to academic experiences, to social experiences. New constructs being tested in this study's conceptual framework include the addition of intermediate outcome measures (i.e., critical thinking and civic engagement), and living-learning program characteristics thought to contribute to openness to diversity.

#### *Rationale for Types and Limitations of Methods*

Multiple regression analysis is limited in that it cannot determine causation. It is not possible to determine if all of the inputs and environments that are important have been included, or that those that have been included are appropriate. Most regression analyses can only determine up to 40% of variance in social science research (Lewis-Beck, 1980). Other variance that influences the outcome of the phenomenon under study is not generally captured by the regression equation. In the current study, there may be other influences on openness to diversity that were not captured by the conceptual model.

The limitations of cluster analysis are primarily centered on the fact that the method is more exploratory than theoretical. In addition, the results of the cluster analysis are highly dependent upon the variables originally included in the analysis. The results of the cluster analysis were interpreted carefully, taking into consideration the theoretical limitation of this methodology (Hair & Black, 2000).

This chapter reviewed the following elements of methods: purpose statement, research questions, hypotheses, conceptual framework, operationalization of variables, sample, instrumentation, data collection, and analytic methods. The next chapter, Chapter 4, will present the results based upon the descriptive, ANOVA, cluster, and multiple regression analyses.

## Chapter 4: Results

The results chapter begins with an overview of the descriptive analyses of the data sample. The univariate and multivariate results follow, and are organized according to the research questions. All analyses conclude with an evaluation of the effectiveness of the analyses in answering the research question, and a discussion about the results and their application to the hypothesis statement. Following the description of the results, the chapter summarizes the major findings of the data analyses.

### *Description of Respondents*

The background characteristics of the students in this study are represented in Table 6. The students in the living-learning sample are predominantly women. Sixty-five percent are women, and thirty-five percent are men; most are also heterosexual. Five percent of the students identify as lesbian, gay, or bisexual; 95% identify as heterosexual. Seventy-six percent of the students are White, 12% are Asian Pacific American, 5% are African American, 4% are multi-racial, 3% are Latino, and one-half of one percent are Native American. The students are diverse by generation status in the United States, but 77% are at least the third generation of their family in the United States. Fifteen percent are second generation, 4% are naturalized citizens, 2% are non-citizens, born outside the United States, and 2% hold a student visa. Most students in the sample identify with a major religion; only 20% of students identify no religion. Most students identify as Christian: 66%. Six percent of students identify “other” as their religious identification; 4% are Jewish, 2% are Buddhist, and 1% each is Muslim and Hindu.

Respondents' parental education and family income vary widely. The most common terminal degree of parents is a bachelors: 29% of fathers and 32% of mothers



Table 6  
Background Characteristics of Sample ( $n=12,236$ )

Demographic/Background Characteristics	Percent	Demographic/Background Characteristics	Percent
Gender		Father's educational attainment	
Male	35.3	Don't know	3.0
Female	64.7	High school or less	15.1
		Some college	14.6
Sexual orientation		Associates degree	5.0
Bisexual	3.1	Bachelors degree	29.1
Gay or lesbian	1.7	Masters degree	20.6
Heterosexual	95.3	Doctoral or professional degree	12.5
Race/ethnicity		Mother's educational attainment	
African American/Black	4.7	Don't know	1.8
Asian Pacific American	11.7	High school or less	15.6
Native American/Alaskan Native	0.3	Some college	16.9
Hispanic/Latino	3.1	Associates degree	8.7
White/Caucasian	75.6	Bachelors degree	32.1
Multi-racial or multi-ethnic	3.5	Masters degree	29.5
Race/ethnicity not included	1.1	Doctoral or professional degree	4.6
Citizenship/generation status		Total annual family income	
Third generation born in U.S.	76.9	\$29,999 or less	11.8
Second generation born in U.S.	15.2	\$30,000–49,999	13.2
Foreign-born, naturalized citizen	3.6	\$50,000–74,999	23.8
Foreign-born, non-citizen	2.4	\$75,000–99,999	17.7
On student visa	1.9	\$100,000 or more	33.6
Religious affiliation			
None	20.4		
Buddhist	1.6		
Christian	66.1		
Hindu	1.1		
Jewish	4.4		
Muslim	0.8		
Other	5.6		

Table 6  
Background Characteristics of Sample ( $n=12,236$ ) (continued)

High School Achievement	Percent	High School Achievement	Percent
Average high school grades		SAT comprehensive score	
A+ or A	47.5	400–1140	20.1
A- or B+	36.9	1150–1250	24.0
B	11.0	1260–1340	24.0
B- or C+	3.2	1350 or higher	31.9
C or C-	0.8		
D+ or lower	0.1	ACT comprehensive score	
No high school GPA	0.5	1–23	20.2
		24–26	21.6
		27–29	28.3
		30 or higher	30.0

have earned a college degree. Thirty percent of mothers and 21% of fathers have earned a masters degree, and 13% of fathers and 5% of mothers have earned a doctorate. Fifteen percent of fathers and 16% of mothers have a high school education or less. The most common family income in this sample is \$100,000 or more per year; 34% of respondent families are in this income bracket. Twelve percent of families have an annual income less than \$30,000. The remaining 54% of families have annual incomes from \$30,000–\$100,000.

Student high school achievement was measured by high school GPA and standardized test scores. Forty-eight percent of students earned an overall “A” grade; 37% earned an “A-” or “B+,” 11% earned a “B”, and the remaining 4% earned a “B-” or lower. The largest percentage of SAT scores was above 1,350: 32%. Twenty percent of students scored 400–1,140, and 48% of students scored in the 1,150–1,340 range. Similarly, 30% of students scored above 30 on the ACT; 20% scored from 1–23; and 50% of students scored in the 24–29 range.

### *Thematic Living-Learning Program Typology and Openness to Diversity*

The analysis for the first research question used a one-way analysis of variance to evaluate the differences among participation in various living-learning program thematic types and growth in openness to diversity. The descriptive results are represented in Table 7. The independent variables had 26 levels: the test variables of interest for this question were the following thematic living-learning program types: (a) Civic (civic engagement, leadership, and service learning/social justice); (b) Cultural (international/global, language, and multicultural/diversity) and (c) Upper-division. The dependent variable was the scale “openness to diversity.” The ANOVA was significant,  $F(26, 7,705) = 5.87, p < .001$ . Tukey’s post hoc tests revealed that upper-division programs had the highest mean score, and were significantly higher than most other program types on openness to diversity. Upper-division programs did not significantly differ from the civic and cultural types, with one exception: upper-division programs were significantly higher than civic service learning/social justice programs. Although civic and cultural programs were in the same subset as the upper-division programs, they were not significantly higher on openness to diversity than other program types, with two exceptions: civic (leadership programs) were higher than disciplinary (science) programs; and cultural (international/global) programs were higher than disciplinary (engineering and computer science and general science) programs, general academic, and honors programs.

High mean scores were found for three other program types: disciplinary (education), disciplinary (humanities), and outdoor recreation. Because the mean scores for these program types were as high as or higher than the program types related to the

hypothesis statement, Tukey's post hoc results were reported. Interestingly, even though the mean scores were sometimes higher than the mean scores for the civic and cultural

Table 7  
Openness to Diversity across Thematic Living-Learning Program Types

#	Name (Major: sub type)	Mean (min: 6; max: 24)	SD	F Test	Tukey's post hoc tests (Sig. among test/other variables)
1	Civic: civic engagement	16.6	3.36	F=5.87	1 NS
2	Civic: leadership	16.8	3.60	df=25	2 > 12
3	Civic: service learning/ social justice	16.1	3.59	p<.001	3 < 22
4	Cultural: international/ global	16.9	3.33		4 > 9, 12, 15, 16
5	Cultural: language	16.7	4.14		5 NS
6	Cultural: multicultural/ diversity	16.3	3.89		6 NS
7	Disc: business	15.9	3.42		
8	Disc: education	16.9	3.27		8 > 9, 12, 15, 16, 18
9	Disc: engineering/ computer science	15.6	3.66		
10	Disc: health science	16.3	3.30		
11	Disc: humanities	17.1	3.17		11 > 12, 15
12	Disc: general science	15.2	3.51		
13	Disc: social science	16.4	3.90		
14	Fine & Creative Arts	16.2	3.86		
15	General Academic	15.4	3.43		
16	Honors	15.8	3.58		
17	Outdoor Recreation	17.2	2.74		17 NS
18	Research	15.4	3.29		
19	Residential College	16.1	3.44		
20	Transition: new student	16.5	3.43		
21	Transition: career exploration	16.5	3.16		
22	Upper-Division	17.8	3.45		22 > 3, 7, 9, 10, 12, 14, 15, 16, 18, 19, 20, 23, 24, 25, 26
23	Wellness/Healthy Living	16.4	3.46		
24	Women: leadership	16.0	3.46		
25	Women: math/science/ engineering	15.8	3.31		
26	Multi-Disciplinary	16.2	3.46		

program types, in no cases were they statistically significantly higher. The disciplinary (education) program type was significantly higher in openness to diversity than disciplinary (engineering/computer science), disciplinary (general science), general academic, honors, and research program types. The disciplinary (humanities) program type was significantly higher in openness to diversity than the disciplinary (general science) and general academic program types. Although the outdoor recreation program type had the second highest mean score (after the upper division type), it did not significantly differ in openness to diversity from any other program type.

### *Cluster Analyses*

A cluster analysis and subsequent ANOVA were used to answer research question number two: Do various structural elements of living-learning programs tend to cluster together to form distinct types of living-learning programs? If so, do students in different clusters of living-learning programs have different levels of openness to diversity?

Using the two-step cluster exploratory technique described in Chapter 3, the following variables were entered into the cluster analysis: where students live; budgeting and reporting sources; numbers of courses offered; number of faculty; roles of undergraduate students; and types of resources and activities. Initial results of the analysis suggested that the total number of usable clusters should be fixed at three, based upon the most pragmatic solution, and upon theoretical considerations (see Table 8). Because there is no prior research on the clustering of living-learning program types, theoretical considerations were used to determine the final cluster solution. Living-learning programs have been defined as initiatives to bridge the curricular and the co-curricular (Shapiro & Levine, 1999), often thought of as the combination of academic

Table 8  
Descriptive of Three Living-Learning Program Type Clusters

	Type	# Students in Sample	Percent
Cluster 1	Large SA/AA	985	31.8
Cluster 2	Small AA	1,727	55.7
Cluster 3	Small SA	390	12.6
Total		3,102	100.0

affairs and student affairs experiences. Cluster solutions grouped around these binary identities of academic and student affairs characteristics. In addition, the analysis revealed a cluster solution of large programs, with a mix of both academic and student affairs influences. The combination of these three programs types (predominantly student affairs, predominantly academic affairs, and large, combined academic and student affairs) resulted in a three-cluster solution.

Table 9 provides the means and standard deviations on each of the variables used in the cluster solution. The clusters are identified as: (a) large, combined student affairs and academic affairs programs; (b) small academic affairs programs; and (c) small student affairs programs. Cluster 1 includes 20 living-learning programs, cluster 2 has 83 programs, and cluster 3 has 66 programs. A notable difference among clusters is shown on the first line, which indicates the mean number of students in each cluster type. Cluster 1 is comprised of large programs; clusters 2 and 3 have smaller programs. Large combined programs are more likely to have students who live together on one hall; small academic student affairs programs are more likely to have students who live on separate halls or communities. The small academic affairs programs are more likely to report to an academic department or administrator; the small student affairs programs are

Table 9  
Living-Learning Characteristics by Cluster (*n=169 programs*)

Variable	Large SA/AA Programs Cluster 1 ( <i>n=20</i> )		Small AA Programs Cluster 2 ( <i>n=83</i> )		Small SA Programs Cluster 3 ( <i>n=66</i> )	
	# of Programs	% of Variable	# of Programs	% of Variable	# of Programs	% of Variable
Mean number of students in program <sup>a</sup>	294	0.0	92	0.0	40	0.0
Live in entire residence hall	12	44.4	9	33.3	6	22.2
Live in a portion of residence hall	8	6.3	70	55.6	48	38.1
Live in community, but in more than one residence hall	0	0.0	3	100.0	0	0.0
Live on campus but not in same hall or community	0	0.0	1	7.7	12	92.3
Budget source: 100% student affairs	5	8.5	27	45.8	27	45.8
Budget source: 100% academic affairs	2	7.1	2	7.1	24	85.7
Budget source: 50/50 academic/student affairs	4	12.1	26	78.8	3	9.1
Budget source: more academic affairs	1	12.5	6	75.0	1	12.5
Budget source: more student affairs	8	19.5	22	53.7	11	26.8
LLP reports to academic department	3	42.9	4	57.1	0	0.0
LLP reports to academic administration	0	0.0	21	100.0	0	0.0
LLP reports to residence life	17	14.5	54	46.2	46	39.3
LLP reports to other student affairs department	0	0.0	4	23.5	13	76.5
Courses taught by LLP for credit <sup>a</sup>	2.3	0.0	1.1	0.0	0.1	0.0
Special LLP course sections <sup>a</sup>	4.3	0.0	0.5	0.0	0.7	0.0
Courses outside LLP for credit <sup>a</sup>	3.5	0.0	0.3	0.0	0.1	0.0
Courses in LLP not for credit <sup>a</sup>	0.2	0.0	0.1	0.0	0.0	0.0
Number of faculty: none	4	6.8	17	28.8	38	64.4
Number of faculty: 1–5	9	9.7	56	60.2	28	30.1

<sup>a</sup> Mean

Table 9  
Living-Learning Characteristics by Cluster (*n=169 programs*) (continued)

Variable	Large SA/AA Programs Cluster 1 ( <i>n=20</i> )		Small AA Programs Cluster 2 ( <i>n=83</i> )		Small SA Programs Cluster 3 ( <i>n=66</i> )	
	# of Programs	% of Variable	# of Programs	% of Variable	# of Programs	% of Variable
Special resources: academic advisors	9	52.9	8	47.1	0	0.0
Special resources: classes	15	48.4	16	51.6	0	0.0
Special resources: faculty offices	14	73.7	5	26.3	0	0.0
Special resources: location	19	28.8	29	43.9	18	27.3
Special resources: study space	17	73.9	4	17.4	2	8.7
Activities: academic advising	13	32.5	25	62.5	2	5.0
Activities: arts/music	13	19.7	49	74.2	4	6.1
Activities: career workshops	16	20.8	49	63.6	12	15.6
Activities: group projects	9	19.6	29	63.0	8	17.4
Activities: intramural sports	14	24.6	34	59.6	9	15.8
Activities: multicultural program	14	15.6	72	80.0	4	4.4
Activities: outdoor recreation	13	25.5	31	60.8	7	13.7
Activities: service learning	7	50.0	5	35.7	2	14.3
Activities: community service	13	17.6	56	75.7	5	6.8
Activities: study abroad	7	33.3	12	57.1	2	9.5
Activities: study groups	18	19.8	46	50.5	27	29.7
Activities: team/community building	8	8.1	63	63.6	28	28.3

<sup>a</sup> Mean

more likely to report to student affairs administrators. The large programs have larger numbers of course offerings of all kinds. Small student affairs programs are more likely to have no faculty participation; the small academic affairs programs are most likely to have between one and five faculty participants. The large programs are more likely to have special academic resources, but the small academic affairs programs are more likely



to have various kinds of activities, with the exception of service learning, which is more common in the large programs.

The purpose of cluster analysis is to create groups that are similar within a given cluster but also different across clusters. Table 10 provides data from a test of these differences. It represents one-way ANOVAs on each of the variables included in the clusters. Each cluster is different from at least one other cluster on each characteristic, at the  $p < .001$  level of significance. These results indicate that the clusters are sufficiently distinct on each of the variables. Because the primary purpose of cluster analysis is to classify distinct groups, the cluster solution is successful.

For the second part of the analysis for research question number two, a one-way analysis of variance was conducted to evaluate the relationship between participation in a living-learning program cluster type and openness to diversity. The descriptive results are represented in Table 11. The independent variables had three levels: (a) large, combined student affairs and academic affairs programs; (b) small academic affairs programs; and (c) small student affairs programs. The dependent variable was the scale “openness to diversity.” The ANOVA was not significant,  $F(2, 2,972) = .18, p = .84$ . The strength of the relationship between cluster type and openness to diversity was weak. The  $\eta^2$  was .00 (near zero), indicating that cluster type accounted for 0% of the variance in openness to diversity.

#### *Differences among Background Characteristics on Openness to Diversity*

Table 12 refers to the differences among students on openness to diversity, by gender and race. Background characteristics of race/ethnicity and gender both showed significant differences in openness to diversity. Women indicated a significantly higher

Table 10  
Living-Learning Structural Characteristics by Cluster ( $n=169$  programs)

Characteristic	Large SA/AA Program ( $n=20$ ) Cluster 1		Small AA Program ( $n=83$ ) Cluster 2		Small SA Program ( $n=66$ ) Cluster 3		Sig.	<i>F</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>		
Number of students in program	441.73	206.36	150.03	105.18	86.32	72.03	***	1430.53
Where students live	1.21	0.41	2.09	0.76	2.05	0.40	***	612.66
LLP budget source	2.97	1.04	2.47	1.46	1.97	1.20	***	105.31
LLP reporting source	1.36	0.76	1.67	1.09	1.11	0.31	***	231.12
Courses taught by LLP for credit	1.64	3.95	1.84	2.61	0.03	0.23	***	60.47
Special LLP course sections	2.48	10.34	0.43	1.02	0.47	1.32	***	40.44
Courses outside LLP for credit	4.58	9.26	0.77	2.22	0.01	0.10	***	177.95
Courses in LLP not for credit	0.33	0.75	0.07	0.40	0.00	0.00	***	98.25
Courses in LLP: other	6.78	9.41	0.08	0.53	0.00	0.00	***	536.18
Number of faculty in LLP	2.78	1.38	2.06	0.74	1.34	0.47	***	321.12
Special resources: academic advisors	1.69	0.46	1.94	0.23	2.00	0.00	***	254.39
Special resources: classes	1.29	0.45	1.86	0.35	2.00	0.00	***	934.32
Special resources: faculty offices	1.34	0.47	1.94	0.24	2.00	0.00	***	1225.05
Special resources: residence hall location	1.12	0.32	1.65	0.48	1.78	0.41	***	590.25
Special resources: study space	1.17	0.37	1.85	0.36	2.00	0.05	***	1514.17
Activities: academic advising	1.26	0.44	1.61	0.49	1.92	0.27	***	343.19
Activities: arts/music	1.49	0.50	1.53	0.50	1.98	0.12	***	173.45
Activities: career workshops	1.21	0.41	1.35	0.48	1.79	0.41	***	230.67
Activities: group projects	1.39	0.49	1.72	0.45	1.92	0.28	***	247.14
Activities: intramural sports	1.43	0.50	1.44	0.50	1.88	0.32	***	150.15
Activities: multicultural program	1.31	0.46	1.10	0.29	1.91	0.28	***	848.31
Activities: outdoor recreation	1.51	0.50	1.65	0.48	1.94	0.25	***	116.96
Activities: service learning	1.57	0.50	1.97	0.17	1.98	0.13	***	573.05
Activities: community service	1.17	0.38	1.27	0.44	1.88	0.33	***	437.77
Activities: study abroad	1.55	0.50	1.93	0.26	1.99	0.11	***	425.32
Activities: study groups	1.08	0.27	1.33	0.47	1.64	0.48	***	266.29
Activities: team/community building	1.55	0.50	1.22	0.41	1.62	0.49	***	234.29

\*\*\*  $p<.001$

Table 11  
Cluster ANOVA on Openness to Diversity

	Mean	SD
Large SA/AA	16.23	3.58
Small AA	16.17	3.55
Small SA	16.28	3.74

openness to diversity than men. Among racial categories, African Americans had the highest level of openness to diversity, significantly higher than Asian Pacific Americans, Whites, and people of multi-racial identity. In addition, Asian Pacific Americans and Latinos were significantly higher than White students on the outcome measure.

#### *Regression Analyses*

Hierarchical multiple linear regression analysis was used to answer research question number three. Using the conceptual framework developed for this study, the

Table 12  
Differences in Gender and Race by Openness to Diversity ( $n=12,236$ )

	Openness to Diversity (min=6; max=24)	SD	Significance
Gender			F=137.83; df=1; p<.001
Male	15.72	3.63	
Female	16.38	3.45	
Race/Ethnicity			F=32.80; df=5; p<.001
1. African American/Black (not of Hispanic origin)	17.31	3.57	1>2,5,6
2. Asian or Pacific Islander (includes the Indian sub-continent)	16.50	3.48	2,4>5
3. American Indian or Alaskan Native	16.52	3.68	
4. Hispanic/Latino (Spanish culture or origin)	16.79	3.64	
5. White/Caucasian (persons not of Hispanic origin)	16.00	3.49	
6. Multi-racial or multi-ethnic	16.29	3.63	

regression analysis was conducted to determine scores on openness to diversity from eleven blocks of predictor variables. The overall results of the analysis indicate that the background characteristics and college environments account for a significant amount of openness to diversity variability,  $R^2 = .32$ ,  $F(2, 2027) = 20.39$ ,  $p < .001$ .

Tests of multicollinearity among the independent variables revealed that there are no violations of this assumption of regression analysis. The highest correlation between variables was between “sense of civic engagement” and “sense of civic empowerment,”  $r = .67$ . All correlations among variables are listed in Appendix F. Tolerance levels were .48 and .50 for civic engagement and empowerment, respectively. The VIF was 2.08 and 1.99 for civic engagement and empowerment, respectively. The ratings between these variables were above zero for tolerance and below 10 for VIF, inferring that there is no violation of multicollinearity among the independent variables in the conceptual framework (Neter, Wasserman, & Kutner, 1985; Pallant, 2001).

Specific results from each of the blocks are outlined in Table 13. The contribution of each variable entered can be examined by looking at two elements: (a) the significance of each variable, and (b) the percent variance explained by each block, after controlling for the influence of all blocks entered previously. Some variables were significant until later variables were entered, suggesting that later variables may have shared variance with earlier variables, and explained a greater part of the variance that contributed to the criterion variable, openness to diversity.

The first block includes background characteristics. Two of the variables in this block were significant, and remained so at the same level ( $p < .01$ ) through the final block. Gender was a significant predictor, and remained a significant direct predictor throughout

Table 13  
Contributors to Openness to Diversity ( $n=2,074$ )

Variable	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Gender	0.10	***	0.08	***	0.07	***	0.07	***	0.06	**	0.06	**	0.06	**
African American/Black	0.10		0.03		0.05		0.05		0.04		0.02		0.01	
Asian Pacific American	0.11		-0.01		0.04		0.03		0.02		-0.01		-0.03	
Hispanic/Latino	0.09		0.03		0.06		0.07		0.06		0.04		0.03	
White/Caucasian	0.07		-0.04		0.01		0.00		-0.02		-0.06		-0.06	
Multi-racial or multi-ethnic	0.05		-0.01		0.01		0.00		-0.01		-0.02		-0.03	
Composite ACT, SAT	-0.10	***	-0.07	***	-0.07	***	-0.09	***	-0.11	***	-0.11	***	-0.11	***
Pre-test scale: importance of diversity activities	0.29	***	0.29	***	0.28	***	0.26	***	0.26	***	0.25	***	0.24	***
Scale: positive diversity climate	0.16	***	0.12	***	0.12	***	0.06	**	0.06	**	0.06	**	0.06	**
Scale: residence hall climate is academically supportive	0.19	***	0.16	***	0.14	***	0.05	+	0.06	*	0.06	*	0.05	*
Scale: residence hall climate is socially supportive	0.24	***	0.20	***	0.18	***	0.15	***	0.15	***	0.14	***	0.15	***
Time spent studying/doing homework	0.05	*	0.04	*	0.04	*	0.04	+	0.03		0.01		0.01	
Soft pure	0.07	***	0.05	*	0.05	*	0.05	*	0.08	**	0.07	*	0.06	*
Soft applied	0.06	**	0.06	**	0.07	**	0.07	***	0.11	**	0.11	***	0.10	**
Hard applied	-0.09	***	-0.07	***	-0.08	***	-0.08	***	0.01		0.02		0.01	
First-Year	-0.13	***	-0.16	***	-0.16	***	-0.16	***	-0.25	***	-0.22	***	-0.21	***
Sophomore	0.02		0.03		0.03		0.03		-0.13	***	-0.11	**	-0.11	**
Junior	0.10	***	0.12	***	0.12	***	0.12	***	-0.02		-0.01		-0.01	
Scale: course-related faculty interaction	0.16	***	0.13	***	0.13	***	0.12	***	0.09	***	0.06	*	0.05	*
Scale: faculty mentorship	0.18	***	0.15	***	0.15	***	0.14	***	0.11	***	0.08	***	0.08	***

Variable (continued)	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Involvement in varsity sports	-0.02		-0.03		-0.03		-0.04	*	-0.03		-0.03		-0.03	+
Involvement in fraternity/sorority	0.01		0.02		0.02		0.02		0.03		0.03		0.03	
Involvement in ethnic/cross-cultural activities/clubs	0.17	***	0.12	***	0.13	***	0.13	***	0.10	***	0.09	***	0.09	***
Scale: positive peer diversity interactions	0.27	***	0.21	***	0.19	***	0.17	***	0.14	***	0.13	***	0.12	***
Scale: discussed academic and career issues with peers	0.27	***	0.24	***	0.23	***	0.21	***	0.19	***	0.17	***	0.17	***
Scale: discussed socio-cultural issues with peers	0.38	***	0.32	***	0.31	***	0.30	***	0.28	***	0.27	***	0.26	***
Number of students in LLP	-0.02		-0.02		-0.01		-0.01		-0.02		-0.02		-0.01	
Academic class of students in LLP	0.00		0.02		0.02		0.02		-0.03		-0.03	+	-0.03	
Where students live	-0.02		-0.02		-0.03		-0.02		-0.02		-0.02		-0.02	
Is LLP selective	-0.02		-0.03		-0.03		-0.01		0.01		0.01		0.01	
Role of undergraduates: mentors	0.04		0.04	+	0.04	+	0.05	*	0.03	+	0.04	+	0.04	+
Role of undergraduates: live in residence hall	0.02		0.00		0.00		0.00		0.02		0.01		0.01	
Role of undergraduates: conduct social/cultural outings	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Role of undergraduates: conduct lectures/workshops	-0.02		-0.03		-0.04		-0.03	+	-0.02		-0.02		-0.02	
# of courses taught for credit in LLP	0.02		0.02		0.02		0.01		0.01		0.01		0.00	
# of faculty in LLP	0.01		0.00		0.00		-0.01		-0.01		-0.01		-0.01	
LLP activities: cultural outings	0.02		0.02		0.02		0.02		0.02		0.01		0.01	
LLP activities: group projects	-0.02		-0.02		-0.01		-0.02		-0.02		-0.02		-0.02	
LLP activities: multicultural programming	0.03		0.03		0.04	+	0.04	+	0.03	+	0.03		0.02	
LLP activities: service learning	0.00		-0.02		-0.03		-0.02		-0.01		0.00		-0.01	
LLP activities: community service	0.05	*	0.04	+	0.04	+	0.04	+	0.03		0.02		0.01	
LLP activities: study groups	-0.01		-0.01		-0.01		-0.01		-0.01		-0.01		-0.01	
LLP activities: team/community building activities	0.00		-0.01		0.00		0.00		0.00		0.00		0.00	

Variable (continued)	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Scale: critical thinking/analysis abilities	0.27	***	0.22	***	0.21	***	0.21	***	0.19	***	0.17	***	0.17	***
Scale: sense of civic engagement	0.33	***	0.28	***	0.27	***	0.25	***	0.23	***	0.21	***	0.20	***
Scale: sense of civic empowerment	0.28	***	0.22	***	0.21	***	0.19	***	0.17	***	0.16	***	0.15	***
$R^2$	0.04		0.12		0.13		0.16		0.21		0.22		0.23	
$R^2$ change	0.04		0.08		0.02		0.03		0.04		0.01		0.01	
$F$	11.50	***	35.12	***	35.69	***	36.87	***	30.08	***	29.11	***	26.54	***
$F$ change	11.50	***	193.02	***	35.53	***	36.62	***	16.39	***	16.32	***	7.52	***

Note: Values shaded gray indicate variables entered into the regression analysis with each new block.

+  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Table 13  
Contributors to Openness to Diversity ( $n=2,074$ ) (continued)

Variable	Block 8		Block 9		Block 10		Block 11	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Gender	0.07	***	0.07	***	0.08	***	0.06	**
African American/Black	-0.03		-0.03		-0.04		-0.01	
Asian Pacific American	-0.09		-0.08		-0.08		-0.03	
Hispanic/Latino	-0.01		-0.01		-0.01		0.01	
White/Caucasian	-0.17		-0.16		-0.17		-0.12	
Multi-racial or multi-ethnic	-0.08		-0.08		-0.08		-0.06	
Composite ACT, SAT	-0.15	***	-0.14	***	-0.16	***	-0.16	***
Pre-test scale: importance of diversity activities	0.19	***	0.18	***	0.18	***	0.16	***
Scale: positive diversity climate	0.04	*	0.04	+	0.04	+	0.03	+
Scale: residence hall climate is academically supportive	0.06	*	0.06	*	0.06	*	0.04	+
Scale: residence hall climate is socially supportive	0.11	***	0.12	***	0.12	***	0.11	***
Time spent studying/doing homework	0.00		0.00		0.00		-0.01	
Soft pure	0.04		0.05	+	0.04		0.04	
Soft applied	0.09	**	0.09	**	0.09	*	0.08	*
Hard applied	0.02		0.02		0.02		0.02	
First-Year	-0.19	***	-0.20	***	-0.20	***	-0.18	***
Sophomore	-0.10	**	-0.10	**	-0.10	**	-0.09	*
Junior	-0.01		-0.01		-0.01		-0.01	
Scale: course-related faculty interaction	0.00		0.01		0.00		-0.01	
Scale: faculty mentorship	0.05	*	0.05	*	0.05	*	0.04	+



Variable (continued)	Block 8		Block 9		Block 10		Block 11	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Involvement in varsity sports	-0.03		-0.03		-0.02		-0.03	
Involvement in fraternity/sorority	0.03		0.03		0.02		0.01	
Involvement in ethnic/cross-cultural activities/clubs	0.06	**	0.06	**	0.05	**	0.04	+
Scale: positive peer diversity interactions	0.04	+	0.04	+	0.04		0.03	
Scale: discussed academic and career issues with peers	0.05	*	0.05	*	0.05	*	0.03	
Scale: discussed socio-cultural issues with peers	0.22	***	0.22	***	0.19	***	0.19	***
Number of students in LLP	-0.02		-0.02		-0.03		-0.03	
Academic class of students in LLP	-0.02		-0.02		-0.02		-0.02	
Where students live	-0.01		-0.03		-0.03		-0.02	
Is LLP selective	0.01		0.01		0.01		0.01	
Role of undergraduates: mentors	0.04	*	0.06	*	0.06	*	0.06	*
Role of undergraduates: live in residence hall	0.02		-0.01		-0.01		-0.01	
Role of undergraduates: conduct social/cultural outings	0.01		-0.01		0.00		-0.01	
Role of undergraduates: conduct lectures/workshops	-0.01		-0.02		-0.03		-0.03	
# of courses taught for credit in LLP	0.01		0.01		0.01		0.01	
# of faculty in LLP	-0.01		-0.01		-0.01		0.00	
LLP activities: cultural outings	0.02		0.06	+	0.06	+	0.06	+
LLP activities: group projects	0.00		-0.01		-0.01		0.00	
LLP activities: multicultural programming	-0.02		-0.03		-0.04		-0.04	
LLP activities: service learning	0.00		0.02		0.01		0.01	
LLP activities: community service	0.00		-0.02		-0.02		-0.03	
LLP activities: study groups	-0.02		-0.02		-0.02		-0.02	
LLP activities: team/community building activities	0.00		-0.01		-0.01		-0.01	

Variable (continued)	Block 8		Block 9		Block 10		Block 11	
	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig	$\beta$	Sig
Scale: critical thinking/analysis abilities	0.09	***	0.09	***	0.09	***	0.07	***
Scale: sense of civic engagement	0.16	***	0.16	***	0.15	***	0.14	***
Scale: sense of civic empowerment	0.11	***	0.11	***	0.10	***	0.01	
$R^2$	0.29		0.29		0.30		0.32	
$R^2$ change	0.06		0.01		0.01		0.02	
$F$	31.72	***	19.58	***	19.65	***	20.39	***
$F$ change	55.33	***	1.01		16.39	***	25.88	***

Note: Values shaded gray indicate variables entered into the regression analysis with each new block.

+  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

all 11 blocks. Women were more likely to have higher openness to diversity scores than men. Standardized test scores were also significant predictors, and the relationship was negative. The higher the student test scores, the lower their level of openness to diversity.

The second block included one variable, the pre-test of importance of diversity activities. This variable also contributed significantly to the variance explained in the model, and remained so throughout the model. In fact, it contributed the most percent variance of all of the blocks, at 8%. A strong relationship between the pre-test and the outcome variable is a good indication that the pre-test is a good input control for student attitudes toward diversity at the time they entered college. This control is a good indication that changes in openness to diversity are influenced by the college experience.

The third block also has one variable, the scale representing a positive diversity climate. This construct had a moderate relationship to openness to diversity at the time it was entered into the regression (contributing one percent to the variance explained), but gradually lost significance as more blocks were entered. This phenomenon suggests that later blocks, such as peer influence (represented in both blocks 8 and 9, where the construct lost the most significance), had a stronger relationship with openness to diversity than the overall climate for diversity. This confirms the importance of proximal influences: peer influence is more proximal than overall campus climate.

The constructs for the social and academic support of the residence halls were entered in the fourth block in the regression. Socially supportive residence hall climates share a strong relationship with openness to diversity. Socially supportive residence halls contributed 3% of the variance explained in openness to diversity.

The fifth block of variables is comprised of constructs that represent academic involvement. Time spent studying was not a significant predictor of openness to diversity. Soft pure and soft applied schools of enrollment are positively related to openness to diversity, compared to the referent category of hard pure schools of enrollment. First-year and sophomore class standing are negatively related to openness to diversity, compared to the referent category of seniors. All variables remained significant to the last step in the regression analysis, with the exception of the soft pure category of school of enrollment.

Course-related faculty interaction and faculty mentoring activities, entered in the sixth block, were moderately significantly related to openness to diversity. They contributed 1% to the variance explained of the model of contributors to openness to diversity. Both measures of faculty interaction, however, lost significance at the time the peer interaction variables were entered. In particular, course-related faculty interaction lost its explanatory power after the eighth block was entered. This relationship between faculty and peer interaction may suggest that the co-curricular experience, most influenced by peers, is a stronger influence than the academic experience, more influenced by faculty.

Co-curricular involvement was entered into the seventh block. The only involvement that was significantly related to openness to diversity was ethnic and cross cultural clubs and activities. Involvement in intercollegiate athletics and fraternities and sororities did not contribute to the variance explained.

The eighth block is represented by peer interaction. Somewhat contradictorily, positive peer diversity interactions did not contribute significantly to the variance

explained on openness to diversity. However, social-cultural interactions with peers shared a strong relationship with openness to diversity, and remained so through the final block.

The ninth block is structural characteristics of living-learning programs. The role of undergraduates as mentors is significant, and the presence of multicultural programming is marginally significant (at  $p < .10$ ). However, this block contributes no amount to the percent of variance explained by the model, although the  $F$  is significant at  $p < .001$ .

The tenth block is critical thinking. At 1%, it contributed a modest amount to the variance explained by the model. However, as an individual predictor entered into the last block, after all other variance in the model had been captured by other predictors, the beta for critical thinking and analysis abilities was significant at  $p < .001$ .

The final block, the eleventh block, is civic engagement. Civic engagement as a block contributed 2% to the variance explained by the model. However, when the civic empowerment variable was entered in block eleven with the civic engagement variable, the results show that civic empowerment lost its explanatory power beyond  $p < .10$ . The absence of significance when civic engagement was entered suggests that the two variables, civic engagement and civic empowerment, share variance. The correlation between these variables was the highest in the model, at  $r = .67$ .

Based upon the results of the hierarchical multiple linear regression analysis, the hypothesis for research question number three is generally accepted. The only exception to the acceptance of the hypothesis is that race was not a significant contributor to openness to diversity as was predicted. College student perceptions of growth in

openness to diversity were significantly predicted by demographic characteristics (gender [but not race]), pre-college importance of diversity activities, and key college environments that support critical thinking, peer interaction, civic engagement, and cultural engagement (ethnic clubs). Openness to diversity was also significantly related to perceptions of the residence hall climate and the overall campus racial climate. Finally, undergraduate student mentors and multicultural programming (marginally) were structural program elements present in living-learning programs that were significantly related to openness to diversity.

### *Summary*

Chapter 4 began with a description of the sample respondents by background characteristics. An analysis of differences on openness to diversity by thematic living-learning program type revealed that students in upper-division living-learning programs had higher perceived growth in openness to diversity than students in most other program types on openness to diversity; some cultural and civic types were also significantly higher on openness to diversity than other thematic living-learning program types.

A cluster analysis of living-learning programs grouped them into three clusters: (a) large, combined student and academic affairs programs; (b) small academic affairs programs; and (c) small student affairs programs. Although the cluster solution distinguished among the groups, ANOVA tests revealed no significant differences in openness to diversity among the cluster groups. Hierarchical multiple linear regression analyses indicated several items successfully contributed to the model for openness to diversity. They included gender; standardized test scores (negative relationship); socially supportive residence halls; majors in applied social sciences; class level; peer interaction;

undergraduate students as mentors in living-learning programs; multicultural programming in living-learning programs (marginally); critical thinking; and civic engagement.

The next chapter, Chapter 5, will begin with a presentation of the major findings of this study. The discussion will include interpretations of these findings with regard to the extant theory and research, and will offer implications of these findings for theory and practice. The discussion chapter will then include a presentation on the generalizability of the results and potential limitations of the study. The chapter concludes with suggestions for further research.

## Chapter 5: Discussion

### *Summary of Findings*

This study used a college impact model to examine how living-learning programs and other college environments contributed to students' perceptions of openness to diversity. Descriptive analyses revealed that there are differences in openness to diversity by race and gender. Women and students of color had higher mean scores on the openness to diversity scale than did men and White students. Differences by gender and race were consistent with prior research on openness to diversity (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Pike, 2002; Whitt, Edison, & Pascarella, 2001).

The analysis of the thematic living-learning typology by openness to diversity revealed that students in some living-learning program types had significantly higher mean scores for perceived growth in openness to diversity than did students in other types of programs. Students in upper-division programs, in particular, had significantly higher openness to diversity than did students in most other program types. This finding is consistent with research that indicates the cognitive effects of college are cumulative, and accrue to students increasingly as they accumulate experiences (Terenzini, Pascarella, & Blimling, 1999). It is also consistent with prior studies on openness to diversity; students who were older had higher openness to diversity than did younger students (Pascarella, et al., 1996; Whitt, et al., 2001).

The civic (leadership) and cultural (international/global) programs had significantly stronger scores on openness to diversity than did the other civic and cultural subtypes. The subtypes of civic (civic engagement), and civic (service learning/social justice) did not differ in openness to diversity from any of the other living-learning



program types. Similarly, the subtypes of cultural (language), and cultural (multicultural/diversity) did not differ in openness to diversity from any of the other living-learning program types. It is possible that the civic and cultural program subtypes vary widely in the amount and kinds of student involvement in each. In addition, the specific structural elements within and across the themes could vary widely. Dissimilarity in the specific structural elements and level of student involvement in these living-learning program subtypes may explain the lack of a consistent pattern in scores on openness to diversity.

The cluster analysis revealed three distinct groups of living-learning programs according to their structural characteristics. The cluster groups could be characterized as: (a) large combined student and academic affairs programs; (b) small academic affairs programs; and (c) small student affairs programs. The groups were consistent with the theoretical background and origin of living-learning programs. Living-learning programs were created in part as a response to the recognition that campus life is becoming increasingly divided along disciplinary lines, and that consequently the student experience is becoming more fragmented (Boyer, 1998). An integrated learning experience is an important aspect of student growth and development (Boyer). Since living-learning programs were created to bridge the curricular and the co-curricular experience, the programs naturally fall across those campus identities. The distinct identity of the cluster types is a reflection of the distinct academic and student affairs cultures on campuses. In reference to the second part of the research question, the cluster types were not different in student perceptions of growth in their openness to diversity. This may be an indication that living-learning programs are designed in a way that is not

necessarily related to their relationship with openness to diversity. The programs clustered in groups that may have differed on other constructs, but not on the construct of openness to diversity. Therefore, the hypothesis for research question number two is rejected, because there were no significant differences in student openness to diversity by living-learning program cluster type.

Hierarchical multiple linear regression analyses indicated that several items significantly contributed to the model for openness to diversity. They included: gender; standardized test scores (negative relationship); socially supportive residence halls; majors in applied social sciences; class level; peer interaction; undergraduate students as mentors in living-learning programs; critical thinking; and civic engagement.

#### *Findings Applied to Research and Theory*

##### *The Contact Hypothesis, Peer Influences, and the Pascarella et al. Conceptual Framework*

This study asked to what extent student environments, particularly living-learning program environments, contribute to perceptions of growth in openness to diversity. In determining the contribution of the environment to growth in openness to diversity, it is necessary to identify facets of the college environment that promote student growth. One of the primary environments identified in this study is participation in a living-learning program. At this point a return to the undergirding theory, the Allport (1954) contact hypothesis, is useful. The central tenet of the Allport contact hypothesis is that interaction reduces prejudicial attitudes. It does this particularly when the interaction is among those of equal status, with meaningful, common goals and the potential for those interacting to become friends. Living-learning programs are settings in which students have the

potential to become friends. The contact hypothesis states that the bias toward friendship is greater than the bias of self-selection. The friendship potential is so strong that it exceeds the effect of the tendency of students to join living-learning programs.

There is evidence for growth due to participation in a living-learning program because the perception that diversity would be important was controlled for in the analyses. One of the items on the pretest for the hierarchical multiple linear regression was students' recollections of their pre-college perceived importance of "getting to know different people" while in college. Students who scored higher on the openness to diversity scale indicated that they grew in their enjoyment of interacting with others around difference. Thus, the growth they experienced through peer interaction was likely independent of their expectation when they entered college to get to know different people.

Newcomb's (1962) model of peer influence suggests that peers influence one another by interacting around group norms. This interaction is strongest in the living environment, because it enhances peer propinquity—or the degree to which people live in close contact with one another. Newcomb also said that peer groups are influential to the extent that they are important to the group (or "meaningful" in Allport terms), and relatively free of outside influences. Being free of outside influences is not very pragmatic in these global times. However, one could argue that the first two years of college in a living-learning program environment comes about as close as possible to a peer group environment strengthened by freedom from outside influences; a unique scenario compared to most present-day living experiences. Thus, both the Allport (1954)

and the Newcomb theories provide a framework that foretold the strong peer association of living-learning program environments on the growth in openness to diversity.

Pascarella et al. (1996) provide a conceptual framework for testing the Allport (1954) and Newcomb (1962) theories using college background characteristics and environments as constructs in the model. The results of testing these constructs against the theories will be reviewed in light of prior research on openness to diversity.

### *Openness to Diversity*

An element that best describes the openness to diversity construct in both the Pascarella et al. (1996) study and the current study is the enjoyment of different values and perspectives. Each scale refers to racial diversity in only one question of the six in the current study and one of eight in the Pascarella et al. study. Thus, openness to diversity is better described as openness to intellectual rather than to racial diversity. The scale has a strong cognitive dimension. In fact, the individual items that comprised this scale were taken from the section of the NSLLP-RES survey measuring cognitive development. And, as reviewed in Chapter 2, open-mindedness is primarily a cognitive, rather than a social or affective, skill. Similarly, the influences on openness to diversity, such as peer interaction and a positive climate, are similar to the influences on other cognitive outcomes including cognitive development and critical thinking (Terenzini, Springer, Pascarella, & Nora, 1995; Terenzini, Pascarella, & Blimling, 1996; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999).

## *Background Characteristics*

### *Gender*

Consistent with the Pascarella et al. and Whitt et al. studies, gender was significantly related to openness to diversity throughout the model; indeed, it was predictive in the Pascarella et al. and Whitt et al. studies throughout three years of college. Prior research has determined that men and women develop in differing ways throughout the undergraduate years, and leave college more different from one another than when they began (Astin, 1993; Levine & Cureton, 1999). It could be that men and women live in differing cultures, and continue to reinforce those differences through their separate peer groups throughout college. Women may score higher in openness to diversity as an indirect effect of their inclination toward intimacy as an important element of personal growth and cognitive development (Gilligan, 1993). Women's inclination toward intimacy may draw them into more peer interactions, the strongest contributor to openness to diversity in this study beyond the pre-test. Since women place a high value on peer interaction, this interaction could exert an indirect influence on their development of openness to diversity. It is also possible that women are more open to other perspectives because they often learn through being connected to others. Many women have practiced skills in how to fully identify with others, and to take on the perspectives of others, in order to understand them (Clinchy, 1996; Walker, 2000).

### *Race*

The results of this study are inconsistent with findings of the Pascarella et al. (1996) and Whitt et al. (2001) studies on the contribution of race to openness to diversity. Whereas Pascarella et al. and Whitt et al. found race (people of color) to be positively

significant in the first and second years of college, the current study found no differences by race on openness to diversity (this study utilizes a predominantly a first and second year sample). In addition, the samples were demographically similar, in that they both drew predominantly from four-year institutions. One of the major differences in the Pascarella et al. sample and the subjects in this study, however, is that all of the students in this study were participants in a living-learning program. It could be that living-learning programs exert a temporizing effect on race. Because of other experiences while in living-learning programs, students of all racial groups may even out in their growth in openness to diversity.

Another possible explanation for the lack of race as a significant contributor to the model is the students of color who responded to the survey may have been those who are more comfortable working within predominantly White university systems. The comfort associated with working within the system, and with being in a living-learning program, may mean that these students do not experience the same relationships among the environmental and outcome variables as do those who are less traditional, and less comfortable working within predominantly White university systems, as evidenced by their willingness to participate in traditional quantitative research.

#### *Standardized Tests*

The results of this study are also inconsistent with findings of the Pascarella et al. (1996) study on the contribution of standardized test scores to openness to diversity. The Pascarella et al. study found a positive relationship between precollege academic ability and openness to diversity, but in the first year of college only; the current study found a negative relationship throughout the model. Unfortunately, the National Study of Student

Learning (NSSL), which is the source of data for the Pascarella et al. and Whitt et al. studies, did not use SAT scores, but a different measure of intellectual preparation at the beginning of college: the Collegiate Assessment of Academic Proficiency (CAAP), developed by the American College Testing Program. The difference in standardized tests renders it difficult to corroborate the effect of SAT scores on openness to diversity with prior research.

It is possible to speculate about the apparent discrepancy with prior research. The current studies prefaced the question with “in thinking about how you have changed during college, to what extent do you feel you have grown in the following areas?” The Pascarella et al. (1996) study asked whether students agreed or disagreed with statements about their perception of growth. It could be that students who score higher on standardized tests have higher expectations of themselves and are subsequently harder on themselves when assessing their own growth. Alternatively, it could be that the lower scoring standardized test takers are more open to growth because they come to college believing they must try harder. Moreover, it may be that they attribute more of their growth to the effect of college. Bowen and Bok (1999) found a similar result in analyzing data from the National Testing Service. These data indicated that Black students, who generally score lower than White students on standardized tests, rated themselves as having gained more from college than did the White students. They were also less inclined to rate themselves at the top of scales on leadership ability, and on written and spoken expression. In other words, they tended to underestimate their own abilities and overestimate their growth and change in college, compared to their White peers.

Standardized tests measure specific types of intelligence. They are purportedly best at predicting first year college grades (Fullinwider & Lichtenberg, 2004). Many researchers agree that the SAT is better at predicting first year grades than it is at predicting other forms of achievement; in addition, it under predicts performance for women. The current sample is 65% women, so the sample may be especially limited in the potential of standardized scores to contribute variance prediction to growth in openness to diversity. In addition, women tend to score lower on the math element of the SAT than do men. The NSLLP instrument included only a composite score item, so it is not possible to decouple the math and verbal scores.

The sample may also be limited by the 33% response rate. It could be that those who chose to answer the survey were more comfortable working within the academic system, reflected in their higher standardized test scores. This comfort may be associated with self-satisfaction, and the lack of initiative to seek out new perspectives, or the lack of appreciation for the growth achieved through learning new perspectives.

Other concepts besides standardized tests have been suggested to measure human attributes that predict potential, growth, and achievement. One of these concepts is noncognitive variables (Sedlacek, 2004). Noncognitive variables are used in many university settings as an alternative measure of achievement potential to standardized tests. These variables are designed to measure student adjustment, motivation, and perceptions. Other researchers who examine noncognitive variables have identified personality characteristics such as extraversion, agreeableness, emotional stability, and intellect and imagination as determining the potential for growth (Sedlacek).



The SAT measures a very specific form of general intelligence, and may not capture the intellectual potential to balance varying opinions and perspectives, an important element in the openness to diversity outcome scale in this study. The SAT does not measure the potential to think broadly. In fact, high SAT scorers may foreclose on intellectual openness to the degree that they believe they are unable to grow from new perspectives. Alternatively, and as mentioned previously, high scorers may be more critical of their own growth, and may have underestimated the degree of their growth in openness to diversity, in comparison to the self-evaluation of more moderate test scorers.

There is little indication of similar findings of a negative relationship between standardized test scores and growth in openness to diversity in prior research (Astin, 1993; Pascarella & Terenzini, 1991). In the large studies summarized by Astin and Pascarella and Terenzini, standardized tests are most often used simply as a control variable, and are not the primary focus of the study. However, Astin did find in one study using Cooperative Institutional Research Program (CIRP) data a negative relationship between SAT verbal scores and leadership ability. In summary, there is little evidence in the extant literature of a negative relationship between standardized test scores and intellectual growth. The finding of the negative relationship in this study is surprising, and requires further inquiry.

### *Campus Racial Climate*

Also contrary to prior research, the students' perceptions of campus racial climate did not consistently contribute to openness to diversity. Pascarella et al. and Whitt et al. (1996) found a positive racial climate contributed to openness to diversity in the first three years of college. The perceptual campus climate construct in the current study was

significant until the ninth block in the regression (which was living-learning program structural characteristics). It could be that living-learning program environments, since they are more proximal in effect than broader campus environments such as perspectives on the climate, have a stronger effect on student growth (Astin, 1991). The use of data from living-learning programs is the single greatest difference between the current study and the Pascarella et al. study, suggesting that this difference may best explain contradictory findings between the two studies on openness to diversity.

### *Residence Hall Climate*

Consistent with prior research, living on campus is related to openness to diversity (Pascarella, et al., 1996; Pike, 2002; Whitt, et al., 2001). The current study had no off-campus students in the sample, so a comparison group was not available. There were two scales in the conceptual framework that represented the climate within residence halls. Climate in the residence halls may be especially important because the strength of the effect of living on campus varies greatly depending upon the specific living environment (Pascarella, Terenzini, & Blimling, 1994). Many studies indicate that living on campus produces intellectual and personal growth to the degree that it facilitates interaction (Astin, 1993; Pascarella, Terenzini, & Blimling, 1994; Pike, 2002). Although Pike (2002) found on-campus living significant in predicting openness to diversity, the Whitt et al. (2001) study found that living on campus lost the effect on openness to diversity by the third year of college.

It may be that the first two years of college are critical to enhancing the influence of the peer group effect facilitated by residence hall life. The current study found that the “socially supportive residence halls” scale contributed a significant amount of variance to

the openness to diversity model. Thus, students' perceptions of how socially tolerant and supportive their residence hall environments contributed to their growth in openness to diversity. This may be an effective illustration of the relationship Newcomb (1962) discussed between perceived peer norms and resulting individual values. After all, living-learning programs—in which all students in this sample were participants—share environments largely descriptive of Newcomb's more impactful peer environments: they share propinquity, are relatively small, and are somewhat sheltered from outside influence. Thus, this research confirms the importance of residence hall living to student growth, and extends the research to the residence hall climate in living-learning programs.

### *Academic Involvement*

#### *Class Level*

The results of this study are consistent with the Pascarella et al. (1996) and Whitt et al. (2001) findings of a negative relationship between first and second year college students and openness to diversity. Pascarella et al. and Whitt et al. found that increasing age predicted greater openness to diversity in all three years of the study. Compared to seniors, first year and sophomore class-levels negatively contributed to openness to diversity in this study. Meta-analyses of college impact indicate that simply attending college promotes growth (Astin, 1993). Part of attending college is related to growth in one's sense of self.

One's growth in self-identity has been explored through racial identity development theory. Helms (1990) defined the autonomy stage of White racial identity development as being “continually open to new information and new ways of thinking”

(Helms, p. 66). Similarly, Kegan (1994) defined self-authors as those who are able to continue to develop a sense of self within a pluralistic world. Baxter Magolda (2001) studied college student development and discovered that the ability to develop one's sense of self is the single greatest developmental achievement of college. Given the well-documented developmental gains attributable to the college experience, it is not surprising that simply advancing from one class level to the next is associated with enhanced intellectual and personal growth.

#### *Hours Studying*

Similar to prior research, the number of hours studying had an inconsistent relationship with openness to diversity, and was not significant in this study by the final block. In the Pascarella et al. (1996) study, the effect of hours studying was only significant in the first year of college. It was not significant in the second or third years. It could be that other college experiences cumulatively become more important to intellectual growth than a single measure of hours studying.

#### *School/College of Enrollment*

The subject matter of study is identified in this study through the school/college of enrollment. Schools and colleges were assigned to Biglan (1973) categories of soft pure, soft applied, hard pure, and hard applied. Soft applied fields such as education, economics, and journalism had a positive relationship to openness to diversity throughout the model. Studying in these fields is related in prior research to attitudes of liberalism (Astin, 1993). It is possible that coursework that emphasizes social issues, such as is found in education and journalism, facilitates complex thinking about culture, values, social perspectives, and controversial issues, elements of the openness to diversity

construct. Similarly, math courses negatively predicted openness to diversity in all three years of the Pascarella et al. (1996) and Whitt et al. (2001) studies. The finding in this study is consistent with the Pascarella et al. and Whitt et al. findings in that some majors that require many math courses (for example, engineering) are negatively related to perceived openness to diversity. This may be because math and science majors provide relatively few opportunities for students to take courses in soft applied fields such as education. Therefore, the negative effect of math courses in the Pascarella et al. and Whitt et al. studies is comparable to the positive correlation of taking courses in the soft applied fields found in this study.

#### *Faculty Interaction*

There is an interesting pattern of association with regard to faculty interaction. The results of this study are consistent with prior research, in which Pascarella et al. (1996) found the faculty effect only in the third year of college. Eighty-four percent of respondents in this study are first- and second-year students (11% are in the third year, and 5% are in the fourth year). Faculty interaction in the Pascarella et al. study contributes significantly to student growth in the upper division years of the college experience, so it is logical that this study does not indicate a relationship between faculty interaction and openness to diversity.

Pike (2002) found a significant effect of faculty interaction until peer interaction entered the path model, when peer interaction overtook faculty interaction in significance. This study indicates a faculty interaction association also until peer interaction enters the model, consistent with Pike's finding. Astin (1993) has said that the single greatest influence on students during college is their peers. Thus, it may be because

the peer association is so strong that faculty interaction in this study lost the most significance when the peer interaction constructs were entered into the regression model. It is important to note that faculty interaction does have a relationship with student intellectual growth (faculty mentorship, for example, remained marginally significant through the final block). However, the relationship is not as strong as the peer relationship consistent with the results of prior research (Astin, 1993; Pike, 2002).

### *Co-Curricular Involvement*

#### *Athletics and Greek Involvement*

Greek involvement showed a mixed pattern of effects in the Pascarella et al. (1996) study; it was negative in the first year for White students and positive for students of color. This study did not indicate a significant contribution to the model for openness to diversity; however, the mean for participation in fraternities and sororities was very low—indicating that very few students in this study participated in Greek life. Or, it might also be that because the sample was entirely composed of students in living-learning programs, the association of living-learning programs with openness to diversity may have exceeded any potential relationship with Greek involvement.

Athletic participation was significantly positive by the third year of college in the Whitt et al. (2001) study, and they speculated that is because of the intensity of the peer athletic team experience. This study did not indicate significance by athletic involvement; however, only 11% of the sample is third year students, and the mean score on this item indicates that most respondents are not involved in intercollegiate athletics.

### *Ethnic Clubs*

Similar to faculty mentorship, the relationship with ethnic clubs was significant until the scale “civic engagement” entered the model, suggesting shared variance between these two variables. It could be that working with others to make a difference in one’s community through civic engagement has similar components to contributing to one’s community through participation in ethnic clubs. A variable for ethnic clubs was not included in the Pascarella et al. (1996) model. Therefore, it is not possible to compare the findings from this inquiry with their study.

### *Peer Interaction*

The “discussed socio-cultural issues with peers” scale contributed 6% of the variance to the model for openness to diversity. Peer interaction contributed more variance than any other variable beyond the pre-test. Each of the individual items in the “discussed socio-cultural issues with peers” scale has elements that support the Allport (1954) contact hypothesis. In fact, each item in the scale represents meaningful interaction in the context of institutional support. Discussion topics in the scale include values, diversity, human rights, religion, customs, and politics (see Appendix C for the complete list of scale items). Therefore, it is not surprising that this scale contributed such a relatively large variance to the model for openness to diversity. The results of this study are also consistent with the Pascarella et al. (1996) and Whitt et al. (2001) findings of a positive relationship between peer interaction and openness to diversity. This study also extends the findings regarding the relationship of peer interaction to living-learning programs. Since the sample was entirely comprised of students in living-learning programs, it is likely that meaningful peer interaction in the context of the institutional

support of living-learning programs is an important contributor to intellectual growth in living-learning programs. As supported by this study, the contact hypothesis is upheld when applied to students in living-learning programs (Allport).

Prior research indicates substantial support for all kinds of peer interaction, particularly when it is in the first year of college, and when it is co-curricular (Whitt, et al., 1999). Peer interaction is most effective when it encourages reflection through activities such as talking, studying, or teaching. The contribution of reflection with peers is understandable given the importance of reflective thinking to cognitive growth (King & Kitchener, 1994).

The “positive peer diversity interactions” scale lost significance when two other peer interaction scales entered the regression, suggesting that this scale shares significant variance with the other two peer scales. There are several potential interpretations of this relationship. One possibility is that “positive peer diversity interactions” represents interactions around structural diversity, and structural diversity may not necessarily be the key predictor of openness to diversity; rather, the content of peer conversations may be the key predictor. Another possibility is that the type of questions asked in each scale differed. The “positive peer diversity interactions” scale asked questions about social activities, such as having meals together and dating; whereas, the two other scales asked more cognitive growth type questions, such as about discussions with students whose personal values are different than one’s own. Therefore, it could be that meaningful conversations are stronger influences on openness to diversity than are behaviors that do not assume meaningful conversation, such as having meals together. A final possibility is related to Newcomb’s (1962) theory of peer influence. He noted that homogenous groups



have a more powerful influence on students than heterogeneous groups. In this study, peer diversity interactions represent heterogeneous groups. Thus, peer diversity interactions may have less of a peer group influence than more homogenous peer group interactions.

### *Structural Characteristics*

#### *Multicultural Programming*

Unlike Pascarella et al. (1996), who relied upon self-reports to look for evidence of multicultural programming (racial or cultural awareness workshops), this study relied upon institutional evidence that multicultural programming (this time in living-learning programs) contributes to openness to diversity. Similar to the Pascarella et al. (1996) finding, living-learning multicultural programming was significant at the .10 level. The relationship may have been larger, but the structural characteristics were entered in the tenth block of the regression equation, after variance had been captured by all previous blocks. In addition, the means on this item were very small, indicating that very few living-learning programs have multicultural programming activities. Nevertheless, students who participated in multicultural programming in their living-learning program were marginally more likely to experience growth in openness to diversity. This finding replicates an earlier study that found that participation in a racial or cultural awareness workshop predicted more favorable attitudes toward diversity for White students. Findings were significant for both men and women, and for those in liberal arts majors as well as those in engineering and physical sciences majors (Springer, Palmer, Terenzini, Pascarella, & Nora, 1996).

### *Undergraduate Mentoring*

The regression model also indicated a positive association of undergraduates as mentors in living-learning programs. Again, the association is remarkable because the mean scores were very low, and mentoring was added in the tenth block, after variance had been taken up by all previous blocks. The significance of undergraduate mentors in living-learning programs affirms the contact hypothesis because supportive, meaningful peer relationships encourage growth in openness to diversity, or perhaps using more Allportian terms, a reduction in prejudice (Allport, 1954). The importance of undergraduate mentoring to intellectual growth is consistent with prior research. Peer tutoring and teaching had positive effects on intellectual growth in the large studies of Astin (1993) and Pascarella and Terenzini (1991).

### *Intermediate Outcomes*

Arguably the strongest results of this study, after peer interaction constructs, are in the contribution of the intermediate outcome constructs to the model. Their contribution is all the more remarkable because they were entered last in the regression, after variance had been captured by all of the other variables.

### *Critical Thinking*

This study found a significant relationship between perceived abilities in critical thinking and openness to diversity. This study's construct was designed differently from other openness to diversity studies. Pascarella et al. (1996) defined critical thinking in the campus environment, rather than in the individual respondent. In addition, the item was a single, rather than a scale, item. These differences may partially explain why the Pascarella et al. study only found an environmental emphasis on critical thinking to be

significant in the second year of college. This study found a significant relationship of critical thinking abilities throughout the regression model.

The connection between openness to diversity and critical thinking has been made in several other studies. However, the direction of the influence is widely acknowledged as unknown (Chang, 2001; Guthrie, King, & Palmer, 1999). That is, it may be that critical thinking influences openness to diversity, or that openness to diversity influences critical thinking, or both. For example, one study found that openness to diversity predicted critical thinking, the reverse direction from the relationship found in this study (Pascarella, Palmer, Moye, & Pierson, 2001). Similarly, in another study, a lower amount of racial bias significantly predicted whether students changed their opinions and developed their own values and ethical standards, aspects of critical thinking (Chang).

However, the King and Kitchener (1994) theory of reflective judgment suggests that students first develop the ability to think critically, and then develop an enhanced openness to diversity. In the King and Kitchener paradigm, an appreciation of diversity or new ideas may act as a precursor to advanced stages of cognitive development. Their research on the cognitive development of college students indicates that students achieve three stages: pre-reflective, quasi-reflective, and reflective (King & Kitchener). Reflective thinking is characterized by the belief that each individual is responsible for constructing knowledge, based upon reflection on diverse perspectives (King & Kitchener). Reflection on diverse perspectives requires students to think complexly. Complex, reflective thinkers listen to other perspectives and new ideas and seriously consider them; thus, their critical thinking leads them to greater openness.

Kuhn (1991) defined open-mindedness as the ability to actively seek out new information and reform one's opinions. Kuhn's research on critical thinking supports the idea that open-mindedness leads to critical thinking. Exploration of new ideas is a central characteristic of critical thinkers. Similarly, seeking to explore the meaning of facts is an item in the "critical thinking" scale in this study. There is an element of seeking in critical thinking, which is rooted in tendencies toward open-mindedness.

The connection of critical thinking abilities to open-mindedness may be related to this element of seeking, to an overarching sense of curiosity. If one is curious about the way that others think, it may facilitate friendship. One item in the "critical thinking" scale is: I enjoy discussing issues with people who don't agree with me. The enjoyment of, or curiosity about, discussing new ideas may contribute to the friendship potential, an element of the contact hypothesis (Allport, 1954). Exploration and reflection also may facilitate the ability to recognize that others are like oneself. Once this recognition occurs, the potential for generalization ensues, which is another important element of the contact hypothesis (Gaertner, 1999). Thus, regardless of the direction of influence, the relationship between critical thinking and openness to diversity supports the theoretical foundation of the contact hypothesis. As Chang (2001) eloquently summarized:

That reduced levels of racial prejudice [as a fundamental element of openness to diversity] is significantly associated with other learning outcomes should not come as a major surprise because challenging students' biases is fundamentally about advancing their critical thinking and reasoning skills. (Chang, p.103)

### *Civic Engagement*

The “civic engagement” scale contributed 2% to the variance predicting openness to diversity. This construct was not in the Pascarella et al. (1996) study, making comparisons not possible. However, the significance of civic engagement to openness to diversity is consistent with prior theory on civic engagement. The crux of this research is that when people believe they can change society, they seek the ability to understand other points of view, which in turn contributes to openness to diversity.

Theories of civic engagement state that people who take other perspectives seriously, necessary in effective civic engagement, contribute to their own development (Colby, Ehrlich, Beaumont, & Stephens, 2003). Thus, civic engagement leads to the development of openness to new ideas and new people (Jones & Abes, 2004). Similarly, the belief that one can change society contributes to the desire to understand other points of view (Walker, 2000). The ability to understand other points of view is an important element of openness to diversity.

An inconsistency in the current study is that living-learning programs with community service and service learning activities were not a significant contributor to openness to diversity. This is despite the fact that community service and service learning have potentially all of the elements of the contact hypothesis. They have the potential for meaningful, equal status interactions with institutional support. It may be that because the values were so low on these items, the significance that could be inherent in these items did not emerge. It could also be that a more structural measure, such as the availability of community service programming, is not related to openness to diversity in the way that attitudinal measures, such as the construct for civic engagement, are. Civic engagement

in this study is a scale measure of attitudes about the importance of civic life. It is a complex measure of attitudes toward civic engagement, whereas the community service item is a single measure of community service programming availability in the living-learning program. The difference in complexity of the two items may partly explain why civic engagement perceptions (attitudes) are more significant contributors to openness to diversity in this study than are civic engagement behaviors.

### *Theoretical and Practice Implications*

Student affairs professionals contribute to student learning mostly by creating environments that are conducive to positive, meaningful interaction among peers. This learning cannot be separated into cognitive and social elements. Openness to diversity is both cognitive (openness to views that you oppose) and affective (getting along with people different than yourself). The distinction between cognitive and affective growth is artificial (Astin, 1991; Grandy, 1988). Since the research indicates that it is difficult to determine direction, or cause and effect, the implication for practice is to create environments that contribute to both intellectual and affective growth.

Another implication of the research is that purposeful educational environments should be designed primarily for the two years of college. In one study, diversity interaction had less effect on students in their third than in their first year of college (Whitt, et al., 2001). Another study found that peers were most influential on intellectual growth in the first year of college (Whitt, et al., 1999). Living-learning programs are mostly targeted to students in the first two years of college, the ideal time to effect student change. Resources should be allocated for meaningful, purposeful peer interaction in living-learning environments primarily during the first two years of college.

The role of student affairs administrators in designing environments for educative peer interactions should extend to involving students in the planning process (Terenzini, Pascarella, & Blimling, 1999). This is one way to encourage the civic engagement of students in campus governance. Involving students in the civic life of campus can contribute to their development; the results from this study show that civic engagement is related to the development of openness to diversity.

Finally, given the bifurcating effects of college on women and men, it may be helpful for practitioners to intentionally create more meaningful interactions across gender. The design of environments could encourage more meaningful interaction between genders, which may benefit the intellectual development of both, by encouraging interaction about disparate ideas and perspectives.

#### *Generalizability*

There is the potential to generalize the findings from this study to living-learning programs nationally, given the broad representation of programs in the study. In addition, where results corroborate earlier research, it is probably reasonable to generalize them to other environments. For example, there is considerable evidence for the impact of positive peer interactions on student growth. A literature review of the relationship between co-curricular involvement and cognitive development concluded that purposeful peer interaction is the most important contributor to intellectual growth, and its effect is cumulative, enhanced by multiple reinforcing experiences (Terenzini, et al., 1999). It may be less important to identify the precise kind of programming for these peer interactions, than it is to identify opportunities to construct environments to facilitate the greatest

amount of meaningful peer interaction, of all kinds. In other words, the more peer interaction there is (within the guidelines of the contact hypothesis), the better.

Research on the contact hypothesis has explored the potential of prejudice reduction to generalize to those beyond the immediate friendship group. When students in a living-learning program create a superordinate identity as participants in living-learning programs, they increase the potential for their prejudice reduction/enhancement of openness to diversity to generalize to everyone in the group (Gaertner, 1999). They do this by creating the sense that others are like them in some way. When they believe they are similar to one another, they will more likely generalize their living-learning program experiences to other life experiences beyond college (Gaertner).

#### *Rival Explanations*

Some could argue that the constructs of peer interaction, civic engagement, critical thinking, and openness to diversity are so alike that they are merely correlated, rather than predictive of one another. However, the methodology controlled for each new addition to the analysis. In addition, the variables did not violate the hierarchical multiple linear regression assumptions of multicollinearity (for instance, the correlation between critical thinking and openness to diversity was .19).

It could also be argued that the significant effects of the college environment on student development may simply reflect the student maturation process. These effects could occur regardless of campus programming such as living-learning programs. Instead, they could occur as a consequence of simply attending college. However, there is ample research that indicates the importance of intentional programming within the first two years of college for student growth and learning. If these influences do not occur



within the first two years, it is possible that students may not ever interact as much or be as open to new ways of thinking. As students become juniors and seniors, they are more likely to be thinking about next steps, such as finishing requirements for a major, graduating, and seeking work.

D'Souza (1991) argued that students do not gain as much as they could from the college learning experience because U.S. colleges and universities are too concerned about politically correct environments. He claimed that administrators limit peer discourse and therefore openness by restricting free speech. However, he may give administrators too much credit by saying that they limit speech. It is not likely that administrators are able to mitigate the strong effects of peer interaction. In fact, this study implies that administrator roles might more importantly be the design of peer environments than the direct intervention into peer discourse. In other words, peer interaction is such a strong influence that it likely occurs regardless of administrator interference. But the question of the honesty and depth of the conversations among peers is a good one. More study on the authenticity and risk taking in peer interaction should be done. D'Souza may be correct that there are ways that environments could be designed to encourage students to take greater risks in their interactions with one another.

D'Souza (1991) and others also claim that concerns about political correctness put too much emphasis on race on U.S. campuses. This study's findings could be interpreted to mean that, because race was not a significant contributor to openness to diversity in the model, race is not a significant influence any longer, just as diversity critics claim (McWhorter, 2000). Another argument on the side of the diversity critics supported by this study is that the scale "diverse peer interactions" was not as significant as peer

interaction in general. Instead, “discussed sociocultural issues with peers” was the scale that was strongest in contributing variance to openness to diversity. This scale is characterized by the nature and the content of conversations among peers, not in terms of the race/ethnicity of the people with which the conversations took place. McWhorter (2000) has argued that intellectualism and integration are more important than structural diversity to the learning experience; in this way, he would agree that the content of the conversations among peers is more important than the peer group’s structural diversity.

However, these results also can be interpreted to challenge the critics because race isn’t restricting cognitive and personal development in the ways the critics claim (Bennett, 1992, 2003; D’Souza, 1991, 1995; Steele, 1990, 1998). In other words, race did not contribute variance to openness to diversity, so one’s racial/ethnic background did not stunt growth in openness to diversity in this study.

#### *Limitations of the Study*

Attitudes are difficult constructs to measure, particularly when measuring growth in attitudes (Astin, 1991). In attitudinal research, there is always the potential that questions designed differently might measure constructs better or more accurately. Not only is it difficult to capture attitudes, it is especially so with a cross-sectional rather than a longitudinal design. Longitudinal designs are much better at prediction, and at determining cause and effect. This cross sectional study attempted to mediate this limitation with the use of a pre-test; however, the pre-test did not ask the same questions as the openness to diversity outcome measure, but merely approximated the questions. The outcome construct attempted to mediate this concern by being worded as a longitudinal question, asking: “In thinking about how you have changed during college,

to what extent do you feel you have grown in the following areas?” Yet, each of these measures are more vulnerable to reliability and validity problems than what a longitudinal design could have elicited.

Although the sample represents over 34 states and the District of Columbia, it is predominantly composed of one Carnegie type: public, research extensive, four-year schools; in addition, many of these universities are the flagship institutions of their state. This limitation may be partly explained by the assumption that most living-learning programs are located at more resource intensive schools. Thus, the limitation of school size may be inherent in living-learning program research. However, given that there is currently no “census” of living-learning programs available, there is no way to corroborate this assumption.

Overall, the results of this study indicate convergent validity for scores for the construct openness to diversity. In comparison to the Pascarella et al. (1996) and Whitt et al. (2001) studies, most of the results were consistent, especially when the questions were worded in close to the same ways. Convergent validity can be claimed when results are replicated using different samples, as between the Pascarella et al. (1996) and the current study, which used NSSL and NSLLP data, respectively.

A strength of this research is that it used a combination of self-reported and institutional data. Although self reported gains show a modest correlation with standard measures, stronger designs incorporate both self-reported and institutional data (Pascarella et al., 2001). However, in this study the strength of using both self-reported and institutional data comes with its own limitations. The use of the institutional data collected by the NSLLP-LLPS brought a series of questions about validity and reliability,

since the instrument has not yet been tested for validity and reliability. First, there is a concern about the questions related to undergraduate roles and living-learning program activities. These two series of questions did not force a “no” answer. Consequently, the analysis was completed with the assumption that all non-responses were “no answer” rather than distinguishing between “no” and “system missing.” Thus, “no” and “no answer” responses appeared to be the same in the LLPS, even though they are clearly and conceptually distinct responses. This is a limitation that needs to be addressed in future NSLLP data collections. Second, there was a 50% response rate for LLPS. This relatively low response rate could affect the reliability of the results. There are, however, several tests that support reliability and validity for scores on the scales on the NSLLP-RES instrument. As detailed in Chapter 3, there is strong reliability for scores on the scale measures, established through several test administrations.

Given these limitations, it may be remarkable that any living-learning program structural characteristics were significant predictors of an outcome at all. The mean answers to most questions were quite low, indicating that most programs do not offer or require most of the programming potentially available in living-learning programs. And, given the vast diversity of programs and the lack of standards of practice, any patterns should be interpreted carefully and cautiously for potential significance. In addition, although the size of the effects was small, the design was conservative because the methodology implemented controls on all previous variables entered in the regression equation.

The lack of difference on openness to diversity by cluster could be a concern about the validity of the clusters. However, it also could be that those particular structural

aspects of living-learning programs do not differentiate well on openness to diversity outcomes.

### *Suggestions for Further Research*

Clearly, more research is needed on the puzzling standardized test score findings in this study. The negative relationship of standardized test scores with openness to diversity needs particular attention. In the future, the verbal and math scores should be disaggregated so that further delineations can be made.

More research is needed on the differences between men and women on their intellectual growth in openness to diversity. Some of this research should be qualitative, so that the relative importance of connection and intimacy to women and its relationship to intellectual growth as measured by openness to diversity can be explored in depth. In addition, more research is needed on the experiences particular to women, and to men, in college. Little is known about the differential effect of the college environment on the attitudes of men and women (Pascarella & Terenzini, 1991).

More research is needed on the effects of living-learning program participation by race. Is it possible that living-learning programs mitigate the differences by race found in other studies on openness to diversity? If so, then what specific kinds of living-learning program environments facilitate openness to diversity, and for whom?

The potential positive effect of undergraduate mentoring in living-learning programs deserves further study. In addition, the presence of multicultural programming in living-learning programs shows promise and should be pursued further, especially since the current study did not delve into the specifics of mentoring or multicultural programs. The instrument merely asked whether these activities existed in their living-

learning programs. In addition, other structural elements in living-learning programs should be examined further. For example, are the three clusters useful broad categories that distinguish living-learning programs structurally from one another? If so, how might these three types of living-learning programs differ on other student outcome traits? Further, structural elements that were linked to the theoretical framework but were not significant contributors to openness to diversity should be examined. In particular, these structural elements included group activities, residence arrangements, courses for credit, and number of faculty.

Longitudinal studies are needed to determine the direction of influence among openness to diversity, critical thinking, and civic engagement. As found in this study, these constructs are strongly related. Purposeful studies should be designed to explore these relationships further.

### *Conclusion*

It is clear that there is a cumulative impact of college environments on students' openness to diversity. The remaining questions for further research primarily center on the design of those environments to best enhance student learning. Expanding access to intentionally designed programs such as living-learning programs may make positive learning outcomes available to more students. When learning is clearly supported by the institution, it captures greater potential for open mindedness, because it then encompasses one of the key elements of the contact hypothesis: institutional support (Allport, 1954).

It is critical that institutions capitalize on the powerful effect of the peer group. It is the peer group that is best able to influence students' expanding awareness of varying perspectives. When students are involved with other students on topics of intellectual and

cultural diversity, they have optimal opportunities for intellectual growth (Pascarella, et al., 2001). Relatively little is known about the specific environmental effects of college, beyond the importance of meaningful peer interaction in the context of institutional support, for enhancing critical thought and intellectual growth in students.

Kuhn (1991) confirmed the importance of more research on the influences of educational environments on students' intellectual growth. She says that if we want to educate young people to be more intellectually open and contribute to a better society, we need to foster their intellectual growth:

Schools that model themselves on the [Dewey] community of inquiry foster not just the acquisition of knowledge, but the acquisition of reason and judgment—the sine qua non for participation in a democratic society, as well as for realization of a fulfilled individual life. And society can make no more important investment than to ensure that its young are raised in educational environments likely to achieve this end. We still have much to learn about the nature of such environments. (Kuhn, p. 298)

## Appendix A

### Participating Institutions in the 2004 National Study of Living-Learning Programs

Institution Name	Carnegie Type	Number Of L/L Programs		
		1–5	6–10	11+
Arizona State University	Research Extensive		♦	
Bowling Green State University	Research Intensive		♦	
Central Arkansas University	Masters College and University	♦		
Central Washington University	Masters College and University	♦		
Clemson University	Research Extensive	♦		
Colorado State University	Research Extensive		♦	
Florida State University	Research Extensive		♦	
George Washington University	Research Extensive			♦
Indiana University	Research Extensive		♦	
Louisiana State University	Research Extensive	♦		
North Carolina State University	Research Extensive	♦		
Northeastern University	Research Extensive		♦	
Northern Illinois University	Research Extensive		♦	
Pennsylvania State University	Research Extensive			♦
Purdue University	Research Extensive			♦
San Jose State University	Masters College and University	♦		
Southern Illinois University	Research Extensive	♦		
Syracuse University	Research Extensive			♦
University of California, Irvine	Research Extensive		♦	
University of Florida	Research Extensive	♦		
University of Illinois, Urbana-Champaign	Research Extensive	♦		
University of Maryland, Baltimore County	Research Extensive		♦	
University of Maryland, College Park	Research Extensive		♦	
University of Michigan	Research Extensive		♦	
University of Missouri	Research Extensive			♦
University of North Carolina, Chapel Hill	Research Extensive		♦	
University of North Carolina, Wilmington	Masters College and University	♦		
University of Northern Iowa	Masters College and University	♦		
University of Richmond	Masters College and University	♦		
University of South Carolina	Research Extensive		♦	
University of Tennessee, Knoxville	Research Extensive	♦		
University of Vermont	Research Extensive		♦	
University of Wisconsin	Research Extensive	♦		
Western Kentucky University	Masters College and University	♦		



## Appendix B

### Descriptive Statistics of Variables

Variable Title	M	SD	Description (n=12,236)
Openness to Diversity	16.07	3.53	Scale 6-24, from not grown at all to very much grown
Gender	1.65	0.48	Recoded to 1=male; 2=female
African American/Black	0.05	0.21	Recoded to 0=no; 1=yes
Asian Pacific American	0.12	0.32	Recoded to 0=no; 1=yes
Hispanic/Latino	0.03	0.17	Recoded to 0=no; 1=yes
White/Caucasian	0.76	0.42	Recoded to 0=no; 1=yes
Multi-racial or multi-ethnic	0.04	0.19	Recoded to 0=no; 1=yes
Composite ACT + SAT	1243	159	SAT score plus converted ACT score, from 400-1600
Pre-test scale: imp of div act	5.70	1.67	Scale 2-8, from not at all important to very important
Scale: Positive diversity climate	17.35	3.42	Scale 6-24, from little or none to a great deal
Scale: Res hall is acad supportive	17.01	3.33	Scale 6-24, from strongly disagree to strongly agree
Scale: Res hall is soc supportive	23.38	4.31	Scale 8-32, from strongly disagree to strongly agree
Time spent studying	3.50	1.21	Item scaled from 1-6, from none to 21+ hours
Soft pure	0.17	0.37	Recoded to 0=no; 1=yes
Soft applied	0.36	0.48	Recoded to 0=no; 1=yes
Hard applied	0.36	0.48	Recoded to 0=no; 1=yes
First-Year	0.64	0.48	Recoded to 0=no; 1=yes
Sophomore	0.21	0.40	Recoded to 0=no; 1=yes
Junior	0.11	0.31	Recoded to 0=no; 1=yes
Scale: Course faculty interaction	8.69	2.45	Scale 4-16, from never to once or more a week
Scale: Faculty mentorship	8.02	2.46	Scale 6-24, from never to once or more a week
Involvement in varsity sports	1.10	0.48	Item 1-4, from not at all involved to very involved
Involvement in fraternity/sorority	1.26	0.73	Item 1-4, from not at all involved to very involved
Involvement in ethnic clubs	1.31	0.68	Item 1-4, from not at all involved to very involved
Scale: Pos peer div interactions	20.13	6.65	Scale 9-36, from not at all to all of the time
Scale: Disc acad issues w/peers	13.11	2.31	Scale 4-16, from never to once or more a week
Scale: Disc socio issues w/peers	15.47	4.44	Scale 6-24, from never to once or more a week
Number of students in LLP	381	513	Students in LLP, from 1-3000
Academic class of students in LLP	3.20	1.29	Item 1-4, from first year to mix of all students
Where students live	1.80	0.76	Item 1-4, from all on one hall to not living together
Is LLP selective	1.42	0.49	1=yes; 2=no
Role: Mentors	1.67	0.47	1=yes; 2=no or missing
Role: Live in residence hall	1.62	0.49	1=yes; 2=no or missing
Role: Conduct cultural outings	1.65	0.48	1=yes; 2=no or missing
Role: Conduct special lectures	1.74	0.44	1=yes; 2=no or missing
# of courses in LLP	2.94	7.32	Item response from none-40
# of faculty in LLP	2.74	1.50	Item 1-6, from none to 21+
LLP act: Cultural outings	0.05	0.31	Sum of req + opt act 1=no or miss; 2=yes
LLP act: Group projects	0.04	0.27	Sum of req + opt act 1=no or miss; 2=yes
LLP act: Multic prog	0.06	0.33	Sum of req + opt act 1=no or miss; 2=yes
LLP act: Service learn	0.00	0.05	Sum of req + opt act 1=no or miss; 2=yes

Variable Title	<i>M</i>	<i>SD</i>	Description (n=12,236)
LLP act: Comm service	0.03	0.23	Sum of req + opt act 1=no or miss; 2=yes
LLP act: Study groups	0.02	0.19	Sum of req + opt act 1=no or miss; 2=yes
LLP act: Team bldg act	0.05	0.30	Sum of req + opt act 1=no or miss; 2=yes
Scale: Critical thinking abilities	17.36	2.64	Scale 6-24, from strongly disagree to strongly agree
Scale: Sense of civic engagement	36.00	6.34	Scale 10-50, from strongly disagree to strongly agree
Scale: Sense of civic empowerment	15.98	2.38	Scale 4-20, from strongly disagree to strongly agree

## Appendix C

### Summary Statistics for Composite Scales

Composite Scales	Cronb. Alpha		Factor Loading	
	2003	2004	2003	2004
<b>Inputs</b>				
<i>Pre-test: Importance of diversity activities<sup>1</sup></i>	.782	.884		
Importance: learning about different cultures			.900	.900
Importance: getting to know students from different backgrounds			.876	.876
<b>Environments</b>				
Campus Racial Climate				
<i>Positive diversity climate</i>	.808	.812		
Transracial student interaction			.738	
Transracial friendship			.723	
Transracial trust & respect			.674	
Campus commitment to success of students of color			.628	
Transracial dating			.585	
Professors respect students of color			.523	
Residence Hall Climate				
<i>Residence hall climate is academically supportive</i>	.793	.808		
Environment supports academic achievement			.706	
Most students study a lot			.612	
Most students value academic success			.555	
It's easy to form study groups			.529	
Adequate study space available			.513	
Staff helps with academics			.501	
<i>Residence hall climate is socially supportive</i>	.867	.868		
Appreciate different races/ethnicities			.747	
Appreciate different religions			.705	
Help and support one another			.699	
Would recommend this residence hall			.584	
Intellectually stimulating environment			.548	
Different students interact with each other			.545	
Appreciation for different sexual orientation			.544	
Peer academic support			.481	
Faculty Interaction				
<i>Course-related faculty interaction</i>	.763	.767		
Visited informally with instructor before/after class			.692	
Made appt to meet instructor in his/her office			.673	
Asked instructor for info related to course			.620	
Communicated with instructor via email			.591	

Composite Scales	Cronb. Alpha		Factor Loading	
	2003	2004	2003	2004
<i>Faculty mentorship</i>	.775	.746		
Worked with instructor on independent project			.724	
Worked with instructor involving his/her research			.592	
Discussed personal problems or concerns with instructor			.534	
Visited informally with instructor on social occasion			.532	
Went to a cultural event with instructor or class			.531	
Discussed career plans & ambitions with instructor			.478	
<b>Peer Interaction</b>				
<i>Positive peer diversity interactions</i>	.892	.898		
Attending social events together			.857	
Sharing meal together			.847	
Having intellectual discussions outside class			.832	
Sharing personal feelings & problems			.819	
Studying together			.766	
Discussing race relations outside class			.694	
Doing extracurricular activities together			.685	
Rooming together			.531	
Dating			.495	
<i>Discussed academic and career issues with peers</i>	.751	.737		
Discussed something learned in class			.743	
Shared concerns about classes and assignments			.725	
Talked about current news events			.672	
Talked about future plans and career ambitions			.497	
<i>Discussed socio-cultural issues with peers</i>	.864	.864		
Discussed social issues such as peace, human rights, justice			.760	
Discussions with students whose personal values different			.726	
Discussed views about multiculturalism and diversity			.721	
Held discussions with those with different religious beliefs			.703	
Talked about different lifestyles and customs			.702	
Discussions with students whose political opinions different			.697	
<b>Intermediate Outcomes</b>				
<b>Intellectual Ability</b>				
<i>Critical thinking/analysis abilities</i>	.725	.707		
Explore meaning of facts when introduced to new ideas			.608	
Have disagreed with author of book/article was reading			.581	
Challenge profs statements before accept as right			.542	
Develop own opinions by analyzing +/- of diff points of view			.536	
Enjoy discussing issues with people who disagree with me			.475	
Prefer courses requiring organize/interpret ideas over facts			.369	

Composite Scales	Cronb. Alpha		Factor Loading	
	2003	2004	2003	2004
Civic Engagement				
<i>Sense of civic engagement</i> <sup>1</sup>		.918		
Volunteer time to community				.841
Work with others to make community better place				.785
Important that I play active role in community				.754
Believe my work has greater purpose for larger community				.751
Value opportunities that allow me to contribute to community				.649
Participate in activities that contribute to common good				.649
Give time to making difference for someone else				.630
Understand extent my groups contribute to larger community				.617
Believe I have responsibilities to community				.599
Believe I have civic responsibility to greater public				.552
<i>Sense of civic empowerment</i> <sup>1</sup>		.758		
Ordinary people can make difference in community				.766
Have power to make difference in community				.740
Little I can do that makes difference for others (reverse code)				.686
I am willing to act for rights of others				.638
Outcome				
<i>Openness to Diversity</i> <sup>2</sup>	.837	.830		
Becoming aware of different philosophies, lifestyles, and cultures				.693
Developing your own values and ethical standards				.669
Improving ability to get along with people different than yourself				.632
Appreciation of racial/ethnic differences				.693
Openness to views that you oppose				.685
Ability to discuss controversial issues				.646

<sup>1</sup> Individual items were not asked on the 2003 Pilot test; factor loadings from 2004 NSLLP data

<sup>2</sup> Factor loading from 2004 NSLLP data

For 2003 Pilot test: n=5,437; For 2004 NSLLP: n=24,538

## Appendix D

### **National Study of Living-Learning Programs 2003–04 Residence Environment Survey NSLLP-RES**

Please note:

Because this survey will be fielded on the world wide web, the questions on this paper-and-pencil version of the questionnaire will be altered in format to conform to the lay-out parameters of a web survey. However, the content and order of the questions will not change from this version. Indeed, the first official page of the survey will be the consent form you see on the following page.

Please feel free to use this version of the instrument for your Human Subjects/IRB applications, but be sure to note that the actual survey will be collected on the web.

## **National Study of Living-Learning Programs**

### **Informed Consent Form**

The primary purpose of this study is to understand college students' perceptions of their residence environments and the impact of residence environments on students' academic and social development. This research will not help you personally. The researchers on this project believe that there are no short- or long-term effects associated with participation in this study.

Your participation in this study is voluntary, and you may skip any questions on the attached survey that you feel uncomfortable answering.

Please be assured that, to the extent permitted by law, personal information obtained for this project will remain confidential, and will not be shared with anyone not associated with this project. However, confidentiality is not absolute or perfect. There are some circumstances where the research staff might be required by law to share information that has been provided. For example, if the researchers have reason to believe that criminal or serious harm may have been done to an individual or individuals, the researchers are required by law to file a report with appropriate agencies.

For the purpose of understanding your collegiate experiences as a whole, some of your demographic records will be obtained from your registrar and merged with your responses to this survey. Any publications of the study will be based on grouped data and will not reveal your identity or your individual records.

We know how busy, and sometimes stressful, college life can be. In fact, some of the questions on the survey may trigger some personal and social emotions that you may like to discuss with someone who can assist you. In these circumstances, please call the Counseling Center at 301-314-7651, where you can schedule an appointment to visit with a counselor. For concerns about alcohol use or the effects of alcohol use on others, please call either the Counseling Center (301-314-7651) or the University Health Center Substance Abuse Program at 301-314-8128, or consult the following website: <http://www.inform.umd.edu/UHC/Library/subsabuse.html>.

If you have any questions about this study, please feel free to contact:

Karen Kurotsuchi Inkelas, PhD  
3214 Benjamin Building  
University of Maryland  
College Park, MD 20742

Phone: 301-405-0682  
Email: [info@livelearnstudy.net](mailto:info@livelearnstudy.net)

I state that I am 18 years of age or older and wish to participate in this study:

☐ Yes   ☐ No

## 2003–04 Residence Environment Study

### YOUR PERCEPTIONS BEFORE ENROLLING IN COLLEGE

1. Thinking back to *before you started college*, what activities did you *think* were going to be very important to you during college? (Circle one response for each.)

	1 = Not at all important	2 = Somewhat important	3 = Important	4 = Very important
Participating in extra-curricular activities .....	1	2	3	4
Participating in volunteer or community service activities.....	1	2	3	4
Getting to know people from backgrounds different than your own .....	1	2	3	4
Learning about cultures different from your own.....	1	2	3	4
Discussing ideas and intellectual topics with other students.....	1	2	3	4
Getting to know your professors outside of class .....	1	2	3	4
Learning more about yourself.....	1	2	3	4
Finding your residence hall to be academically supportive.....	1	2	3	4
Finding your residence hall to be socially supportive .....	1	2	3	4
Drinking alcohol during social occasions.....	1	2	3	4

2. Looking back to *before you started college*, how confident were you that you would be successful at the following? (Circle one response for each.)

	1 = Not at all confident	2 = Somewhat confident	3 = Confident	4 = Very confident
Handling the challenge of college-level work...	1	2	3	4
Feeling as though you belong on campus.....	1	2	3	4
Analyzing new ideas and concepts .....	1	2	3	4
Applying something learned in class to the "real world".....	1	2	3	4
Enjoying the challenge of learning new material.....	1	2	3	4
Appreciating new and different ideas, beliefs ..	1	2	3	4
Developing your own values and beliefs .....	1	2	3	4
Gaining skills in working with others.....	1	2	3	4
Growing and developing academically .....	1	2	3	4
Making a difference in the community in which you live .....	1	2	3	4
Being satisfied with your college experience ...	1	2	3	4

### YOUR EXPERIENCES IN COLLEGE

3. Using a continuum of 1 = Very Difficult to 6 = Very Easy, please indicate how you felt the following activities to be during your first year in college: (Circle one response for each.)

	1	2	3	4	5	6
Amount or difficulty of coursework ...	1	2	3	4	5	6
Using computers for coursework.....	1	2	3	4	5	6
Seeking academic or personal help when you needed it.....	1	2	3	4	5	6
Becoming familiar with the campus.....	1	2	3	4	5	6
Learning to use e-mail .....	1	2	3	4	5	6
Making new friends.....	1	2	3	4	5	6
Managing your time effectively.....	1	2	3	4	5	6
Managing money effectively .....	1	2	3	4	5	6
Communicating with instructors outside of class.....	1	2	3	4	5	6
Being separated from your family ....	1	2	3	4	5	6
Forming study groups .....	1	2	3	4	5	6
Getting along with your roommate(s) .....	1	2	3	4	5	6
Getting to know other people in your residence hall .....	1	2	3	4	5	6

4. During the past year, how much time did you spend during a typical week doing the following activities? (Circle one response for each.)

	1	2	3	4	5	6
Attending classes .....	1	2	3	4	5	6
Studying/doing homework.....	1	2	3	4	5	6
Socializing with friends .....	1	2	3	4	5	6
Exercising/sports .....	1	2	3	4	5	6
Partying .....	1	2	3	4	5	6
Working (for pay) .....	1	2	3	4	5	6
Volunteer work.....	1	2	3	4	5	6
Student clubs/groups .....	1	2	3	4	5	6
Watching TV alone .....	1	2	3	4	5	6
E-mail or instant messaging.....	1	2	3	4	5	6
Playing video/computer games.....	1	2	3	4	5	6



## 2003–04 Residence Environment Study

**5. During the past year, how involved are/were you in any of the following activities?** (Circle one response for each.)

	1 = Not at all involved 2 = Somewhat involved				3 = Involved 4 = Very involved			
Fraternity/sorority .....	1	2	3	4				
Service fraternity/sorority .....	1	2	3	4				
Marching band .....	1	2	3	4				
Arts/music performances & activities.....	1	2	3	4				
Intramural or club sports .....	1	2	3	4				
Varsity sports.....	1	2	3	4				
Student government.....	1	2	3	4				
Political or social activism .....	1	2	3	4				
Religious clubs and activities .....	1	2	3	4				
Ethnic/cross-cultural activities, clubs .....	1	2	3	4				
Media activities (e.g., newspaper, radio) .....	1	2	3	4				
Work-study or work on-campus.....	1	2	3	4				
Work off-campus.....	1	2	3	4				
Armed Services ROTC .....	1	2	3	4				
One-time community service activity .....	1	2	3	4				
Ongoing community service activity .....	1	2	3	4				
Other (specify: _____) .....	1	2	3	4				

**6. Who did you primarily socialize with during the current school year?** (Circle all that apply.)

1. People you work with
2. People in social clubs/activities
3. People you attend class with
4. People in your major or intended major
5. People in a living-learning (L/L) program
6. People in your residence hall (not in L/L program)
7. Friends from home
8. Other: \_\_\_\_\_

**7. During interactions with other students outside of class, how often have you done each of the following during the current school year?** (Circle one response for each.)

	1 = Never 2 = A few times a semester				3 = A few times a month 4 = Once or more a week			
Discussed something learned in class .....	1	2	3	4				
Talked about current news events .....	1	2	3	4				

Talked about different lifestyles/customs.....	1	2	3	4
Shared your concerns about classes and assignments .....	1	2	3	4
Held discussions with students whose personal values were very different from your own.....	1	2	3	4
Discussed major social issues such as peace, human rights, and justice .....	1	2	3	4
Talked about your future plans and career ambitions .....	1	2	3	4
Held discussions with students whose religious beliefs were very different from your own.....	1	2	3	4
Discussed your views about multiculturalism and diversity .....	1	2	3	4
Studied in groups.....	1	2	3	4
Held discussions with students whose political opinions were very different from your own.....	1	2	3	4

**8. About how often have you done each of the following during the current school year?** (Circle one response for each.)

	1 = Never 2 = A few times a semester				3 = A few times a month 4 = Once or more a week			
Asked your instructor for information related to a course you were taking .....	1	2	3	4				
Visited informally with an instructor before or after class.....	1	2	3	4				
Made an appointment to meet with an instructor in his/her office .....	1	2	3	4				
Communicated with your instructor using e-mail .....	1	2	3	4				
Visited informally with an instructor during a social occasion (e.g., over coffee or lunch) ..	1	2	3	4				
Discussed your career plans and ambitions with an instructor .....	1	2	3	4				
Discussed personal problems or concerns with an instructor .....	1	2	3	4				
Went to a cultural event (e.g., concert or play) with an instructor or class.....	1	2	3	4				
Worked with an instructor on an independent project .....	1	2	3	4				
Worked with an instructor involving his/her research .....	1	2	3	4				

## 2003–04 Residence Environment Study

**9. Please indicate the level to which you agree with the following statements:** (Circle one response for each.)

<b>1 = Strongly disagree</b>	<b>3 = Agree</b>
<b>2 = Disagree</b>	<b>4 = Strongly agree</b>

I frequently question or challenge professors' statements and ideas before I accept them as "right" ..... 1 2 3 4

I prefer courses in which the material helps me understand something about myself..... 1 2 3 4

I prefer courses requiring me to organize and interpret ideas over courses that ask me only to remember facts or information ..... 1 2 3 4

There have been times when I have disagreed with the author of a book or article that I was reading ..... 1 2 3 4

I consider the best teachers to be those who can tie things learned in class to things that are important to me in my personal life ..... 1 2 3 4

I enjoy discussing issues with people who don't agree with me..... 1 2 3 4

I try to explore the meaning and interpretations of the facts when I am introduced to a new idea.... 1 2 3 4

A good way to develop my own opinions is to critically analyze the strengths and limitations of different points of view ..... 1 2 3 4

I have become excited about a specific field or academic major as a result of taking a course in that field..... 1 2 3 4

When I discover new ways of understanding things, I feel even more motivated to learn..... 1 2 3 4

When I don't understand something in a course, I work at it until I do ..... 1 2 3 4

Something I learned in one class helped me understand something from another class..... 1 2 3 4

I try to look at everybody's side of a disagreement before I make a decision..... 1 2 3 4

I enjoy the challenge of learning complicated new material ..... 1 2 3 4

I prefer reading things that are relevant to my personal experiences..... 1 2 3 4

I often have discussions with other students about ideas or concepts presented in classes ..... 1 2 3 4

Learning is important to me because it will give me greater control over my life ..... 1 2 3 4

For me, one of the most important benefits of a college education is a better understanding of myself and my values..... 1 2 3 4

I enjoy courses that are intellectually challenging ..... 1 2 3 4

I have applied material learned in a class to other areas in my life, such as in my job, internship, interactions with others ..... 1 2 3 4

**10. In thinking about how you have changed during college, to what extent do you feel you have grown in the following areas?** (Circle one response for each.)

<b>1 = Not grown at all</b>	<b>3 = Grown</b>
<b>2 = Grown somewhat</b>	<b>4 = Very much grown</b>

Becoming more aware of different philosophies, lifestyles, and cultures ..... 1 2 3 4

Developing your own values and ethical standards..... 1 2 3 4

Understanding yourself and your abilities, interests, and personality..... 1 2 3 4

Improving your ability to get along with people different than yourself..... 1 2 3 4

Ability to put ideas together and to see relationships between ideas..... 1 2 3 4

Ability to learn on your own, pursue ideas, and find information you need..... 1 2 3 4

Appreciation of racial/ethnic differences..... 1 2 3 4

Ability to critically analyze ideas and information..... 1 2 3 4

Learning more about things that are new to you ..... 1 2 3 4

Appreciation of art, music, and drama..... 1 2 3 4

Gaining a broad general education about different fields of knowledge ..... 1 2 3 4

Openness to views that you oppose ..... 1 2 3 4

Ability to discuss controversial issues ..... 1 2 3 4

Motivation to further explore ideas presented in class..... 1 2 3 4

**11. Now that you have been in college for a while, how confident do you feel in the following areas?** (Circle one response for each.)

<b>1 = Not at all confident</b>	<b>3 = Confident</b>
<b>2 = Somewhat confident</b>	<b>4 = Very confident</b>

Writing ability ..... 1 2 3 4

Math ability ..... 1 2 3 4

Working independently ..... 1 2 3 4

Research ability ..... 1 2 3 4

Computer ability..... 1 2 3 4

Problem-solving ability..... 1 2 3 4

Library skills..... 1 2 3 4

Expressing ideas orally..... 1 2 3 4

Working as part of a team..... 1 2 3 4

Time management skills ..... 1 2 3 4

Leadership ability..... 1 2 3 4

## YOUR RESIDENCE HALL ENVIRONMENT

**1 = Never**                      **3 = A few times a month**  
**2 = A few times a semester**    **4 = Once or more a week**  
**9 = Not available in my residence hall**

**13. Consider how well each of the following statements describes your residence hall environment: (Circle one response for each.)**

My residence environment clearly supports my academic achievement .....	1	2	3	4
I think the staff in my residence environment spend a great deal of time helping students succeed academically .....	1	2	3	4
I think it's easy for students to form study groups in my residence environment .....	1	2	3	4

14. To what extent have you done the following with students from a racial/ethnic group that is different from your own? (Circle one response for each.)

	<b>1 = Not at all</b>	<b>2 = A little</b>	<b>3 = A lot</b>	<b>4 = All of the time</b>
Studied together .....	1	2	3	4
Shared a meal together .....	1	2	3	4
Were roommates .....	1	2	3	4
Attended social events together .....	1	2	3	4
Had intellectual discussions out of class .....	1	2	3	4
Dated someone .....	1	2	3	4
Shared personal feelings and problems .....	1	2	3	4
Participated in extracurricular activities together (e.g., clubs) .....	1	2	3	4
Had meaningful discussions about race relations outside of class .....	1	2	3	4
Had guarded, cautious interactions .....	1	2	3	4
Had tense, or even hostile interactions .....	1	2	3	4

**15. Please rate the extent to which each of the following is descriptive of your college campus:**  
(Circle one response for each.)

	<b>1 = Little or none</b>	<b>3 = Quite a bit</b>		
	<b>2 = Some</b>	<b>4 = A great deal</b>		
Respect by white professors for students of color.....	1	2	3	4
Dating between students of color and white students.....	1	2	3	4
Inter-racial tension in the residence halls.....	1	2	3	4
Friendship between students of color and white students.....	1	2	3	4
Campus commitment to develop an environment that is conducive to the success of students of color.....	1	2	3	4
Separation among students from different racial/ethnic backgrounds on campus.....	1	2	3	4
Trust and respect between students from different racial/ethnic backgrounds.....	1	2	3	4
Interaction between students of color and white students.....	1	2	3	4
Racial conflict on campus.....	1	2	3	4

## 2003–04 Residence Environment Study

**16. Please indicate the extent to which you agree or disagree with the following statements:** (Circle one response for each.)

1 = Strongly disagree      3 = Agree  
2 = Disagree              4 = Strongly agree  
9 = Don't know/Never thought about this

Since coming to college, I have learned a great deal about other racial/ethnic groups .....1   2   3   4   9

I have gained a greater commitment to my racial/ethnic identity since coming to college .....1   2   3   4   9

My campus's commitment to diversity fosters more division among racial/ethnic groups than inter-group understanding.....1   2   3   4   9

Since coming to college, I have become aware of the complexities of inter-group understanding .....1   2   3   4   9

My relationships with students from different racial/ethnic backgrounds during college have been positive .....1   2   3   4   9

I think this campus's focus on diversity puts too much emphasis on the differences between racial/ethnic groups .....1   2   3   4   9

My social interactions on this campus are largely confined to students of my race/ethnicity .....1   2   3   4   9

At times, it is important to be with people of my own racial/ethnic group for the chance to be myself .....1   2   3   4   9

### CITIZEN PERCEPTIONS

**17. Please indicate your agreement or disagreement with the following items:** (Circle one response for each.)

1 = Strongly disagree      4 = Agree  
2 = Disagree              5 = Strongly agree  
3 = Neutral

*For the items that refer to a "community," please refer to the community to which you feel the most affiliated, whatever that may be.*

I understand the extent to which the groups I participate in contribute to the larger community .....1   2   3   4   5

It is important to me that I play an active role in my communities .....1   2   3   4   5

I volunteer my time to the community .....1   2   3   4   5

I believe my work has a greater purpose for the larger community .....1   2   3   4   5

There is little I can do that makes a difference for others .....1   2   3   4   5

I believe I have responsibilities to my community .....1   2   3   4   5

I give time to making a difference for someone else .....1   2   3   4   5

Ordinary people can make a difference in their community .....1   2   3   4   5

I work with others to make my communities better places .....1   2   3   4   5

I have the power to make a difference in my community .....1   2   3   4   5

I am willing to act for the rights of others .....1   2   3   4   5

I participate in activities that contribute to the common good .....1   2   3   4   5

I believe I have a civic responsibility to the greater public.....1   2   3   4   5

I value opportunities that allow me to contribute to my community .....1   2   3   4   5

### EXPERIENCE WITH ALCOHOL

**18. How did your drinking habits change from high school to college?** (Circle one response.)

1. I don't drink alcohol and I never have (*skip to question 22*)
2. I started drinking in college
3. I am drinking less in college
4. I am drinking more in college
5. I stopped drinking in college
6. No change

**19. Think back over last semester. During a typical two week period, how many times did you have 5 or more drinks(men) or 4 or more drinks (women) in a row?** (Circle one response.)

- |          |                     |
|----------|---------------------|
| 0. None  | 3. 3–5 times        |
| 1. Once  | 4. 6–9 times        |
| 2. Twice | 5. 10 or more times |

**20. What factors influence how much you drink on a given occasion?** (Circle all that apply.)

1. As a reward for working hard
2. To fit in
3. To feel more comfortable in social situations
4. If everyone else is drinking
5. If it is free or cheap
6. If it is a special occasion
7. If I'm having a bad day or got a bad grade
8. To lower my inhibitions about having sex
9. To get away from my problems and troubles
10. To get drunk
11. None of the above

## 2003–04 Residence Environment Study

**21. Since the beginning of the school year, how many times have any of the following happened to you as a result of your own alcohol use?** (Circle one response for each.)

**1 = Not at all    2 = Once    3 = Twice or more**

- |   |   |   |   |
|---|---|---|---|
| I have missed or performed poorly in class .....              | 1 | 2 | 3 |
| I have been confronted by a residence hall staff member ..... | 1 | 2 | 3 |
| I have had a hangover .....                                   | 1 | 2 | 3 |
| I have become sick or vomited.....                            | 1 | 2 | 3 |
| I have passed out .....                                       | 1 | 2 | 3 |
| I have had memory loss or blackouts .....                     | 1 | 2 | 3 |
| I have physically harmed myself or another person .....       | 1 | 2 | 3 |
| I have caused a disturbance (i.e., been noisy) .....          | 1 | 2 | 3 |
| I have damaged property .....                                 | 1 | 2 | 3 |
| I have had unprotected sex.....                               | 1 | 2 | 3 |
| I have received a citation or been arrested.....              | 1 | 2 | 3 |
| I have regretted getting sexually involved with someone.....  | 1 | 2 | 3 |
| I have coerced another person into being sexual with me ..... | 1 | 2 | 3 |
| I have been ashamed by my behavior.....                       | 1 | 2 | 3 |
| I have had a conflict with my roommate or another person..... | 1 | 2 | 3 |
| I have fallen behind in my studies .....                      | 1 | 2 | 3 |
| I have regretted losing control of my senses .....            | 1 | 2 | 3 |

**22. Since the beginning of the school year, how often have you experienced any of the following because of others' drinking?** (Circle one response for each.)

**1 = Not at all    2 = Once    3 = Twice or more**

- |   |   |   |   |
|---|---|---|---|
| I have been harassed, insulted, or humiliated .....                   | 1 | 2 | 3 |
| I have had a serious argument or quarrel.....                         | 1 | 2 | 3 |
| I have been pushed, hit, or assaulted.....                            | 1 | 2 | 3 |
| I have had my property damaged.....                                   | 1 | 2 | 3 |
| I have had to "baby sit" or take care of another student.....         | 1 | 2 | 3 |
| I have had my studying or sleep interrupted.....                      | 1 | 2 | 3 |
| I have experienced an unwanted sexual advance .                       | 1 | 2 | 3 |
| I have been the victim of sexual assault or date rape .....           | 1 | 2 | 3 |
| I have been inconvenienced from vomit in the hallway or bathroom..... | 1 | 2 | 3 |
| I have been affected by the behavior of guests who are drinking ..... | 1 | 2 | 3 |

## FUTURE ACTIVITIES

**23. Which of the following activities do you plan to participate in while in college that you have not participated in yet?** (Circle all that apply.)

1. Practicum, internship, field experience, co-op experience, or clinical assignment
2. Community service, volunteer work, or service learning
3. Research with a professor
4. Taking a leadership position
5. Study abroad
6. Independent research
7. Self-designed major
8. Culminating senior experience (e.g., capstone course, thesis project, comprehensive exam, etc.)
9. None of the above

## OVERALL SATISFACTION WITH COLLEGE

**24. Indicate the extent to which you agree or disagree with the following statements:** (Circle one response for each.)

**1 = Strongly disagree    3 = Agree  
2 = Disagree    4 = Strongly agree  
9 = Don't know/Never thought about this**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| I feel comfortable on campus.....   | 1 | 2 | 3 | 4 | 9 |
| My college/university is supportive of me .....                                   | 1 | 2 | 3 | 4 | 9 |
| If I had to do it over again, I would choose the same college or university ..... | 1 | 2 | 3 | 4 | 9 |
| I feel that I am a member of the campus community.....                            | 1 | 2 | 3 | 4 | 9 |
| I feel a sense of belonging to the campus community.....                          | 1 | 2 | 3 | 4 | 9 |

**25. How satisfied have you been with each of the following aspects of your academic experience at your college or university?** (Circle one response for each.)

**1 = Very dissatisfied    3 = Satisfied  
2 = Dissatisfied    4 = Very satisfied**

- |  |   |   |   |   |
|--|---|---|---|---|
| The intellectual quality and challenge of the classes I have taken .....     | 1 | 2 | 3 | 4 |
| The size of my classes .....   | 1 | 2 | 3 | 4 |
| The relevance of the course material to issues that are important to me..... | 1 | 2 | 3 | 4 |
| The opportunity to get into classes that I really want to take.....          | 1 | 2 | 3 | 4 |

## 2003–04 Residence Environment Study

The amount of effort I am putting into my courses ..... 1 2 3 4

The amount of interaction between instructors and students ..... 1 2 3 4

The quality of relationships with my instructors ..... 1 2 3 4

The quality of relationships with college/university staff members ..... 1 2 3 4

Your overall satisfaction with this college/university ..... 1 2 3 4

### 26. Do you plan to return to the same college or university next fall? (Circle one response.)

1. Yes
2. No, I am graduating this year
3. No, I am enrolling at a different college or university
4. No, I will not be pursuing any form of education next fall
5. Undecided

### BACKGROUND INFORMATION

#### 27. What is your gender? (Circle one response.)

1. Male
2. Female
3. Transgender

#### 28. Please indicate your sexual orientation: (Circle one response.)

1. Bisexual
2. Gay or Lesbian
3. Heterosexual

#### 29. Please circle the one response that you think best applies to your race/ethnicity: (Circle one response.)

1. African American/Black (not of Hispanic origin)
2. Asian or Pacific Islander (includes the Indian sub-continent)
3. American Indian or Alaskan Native
4. Hispanic/Latino (of Spanish culture or origin)
5. White/Caucasian (not of Hispanic origin, having origins in any of the original peoples of Europe, North Africa, or the Middle East)
6. Multi-racial or multi-ethnic
7. Race/ethnicity not included above

### 30. Please indicate your citizenship and/or generation status: (Circle one response.)

1. Your grandparents, parents, and you were born in the U.S.
2. Either or both your parents and yourself were born in the U.S.
3. You were born in the U.S., but at least one of your parents was not
4. You are a foreign born, naturalized citizen
5. You are a foreign born, resident alien/permanent resident
6. You are on a student visa

### 31. What is your current religious affiliation? (Circle one response.)

- |   |                 |
|---|-----------------|
| 0. None   | 3. Hindu        |
| 1. Buddhist                                     | 4. Jewish       |
| 2. Christian (e.g., Catholic, Protestant, etc.) | 5. Muslim       |
|   | 6. Other: _____ |

### 32. What is the highest level of education completed by one or both of your parent(s) or guardian(s)? (Circle one in each column, if applicable.)

	Father/ M Guardian	Mother/ F Guardian
Don't know.....	0	0
High school or less .....	1	1
Some college.....	2	2
Associates degree .....	3	3
Bachelors degree .....	4	4
Masters degree.....	5	5
Doctorate or professional degree (JD, MD, PhD) .....	6	6

### 33. What is your best estimate of your parents' total income last year? Consider income from all sources before taxes. (Circle one response.)

- |                         |                            |
|-------------------------|----------------------------|
| 1. Less than \$6,000    | 8. \$40,000 to \$49,999    |
| 2. \$6,000 to \$9,999   | 9. \$50,000 to \$59,999    |
| 3. \$10,000 to \$14,999 | 10. \$60,000 to \$74,999   |
| 4. \$15,000 to \$19,999 | 11. \$75,000 to \$99,999   |
| 5. \$20,000 to \$24,999 | 12. \$100,000 to \$149,999 |
| 6. \$25,000 to \$29,999 | 13. \$150,000 to \$199,999 |
| 7. \$30,000 to \$39,999 | 14. \$200,000 or more      |

## 2003–04 Residence Environment Study

### HIGH SCHOOL INFORMATION

**34. What were your average grades in high school?** (Circle one response.)

- |             |                       |
|-------------|-----------------------|
| 1. A+ or A  | 5. C or C-            |
| 2. A- or B+ | 6. D+ or lower        |
| 3. B        | 7. No high school GPA |
| 4. B- or C+ |                       |

**35. Please write your combined SAT and/or ACT score on the blanks provided:** (e.g., 1 2 0 0)

SAT Composite..... \_ \_ \_ \_

ACT Composite ..... \_ \_ \_ \_

### COLLEGE INFORMATION

**36. What is your current class level?** (Circle one response.)

- |               |                     |
|---------------|---------------------|
| 1. First year | 4. Senior           |
| 2. Sophomore  | 5. Graduate student |
| 3. Junior     | 6. Other            |

**37. What is your best estimate of your grades so far in college?** (Circle one response.)

- |              |                   |
|--------------|-------------------|
| 1. 3.50–4.00 | 4. 2.00–2.49      |
| 2. 3.00–3.49 | 5. 1.99 or less   |
| 3. 2.50–2.99 | 6. No college GPA |

**38. Did you receive financial aid in 2003-2004 in the form of:** (Circle all that apply.)

0. Not receiving financial aid
1. Loans
2. Need-based scholarships or grants
3. Non-need-based scholarships or grants
4. Work-study
5. Athletic scholarship
6. Other: \_\_\_\_\_

**These 2 questions will be customized for each institution.**

**39. Please specify which living-learning program(s) you have ever participated in while in college:** (Circle all that apply.)

1. Beyond the Classroom
2. CIVICUS Program
3. College Park Scholars Program
4. Gemstone Program
5. Global Communities
6. Hinman CEOs Program
7. Honors Humanities Program
8. Jimenez-Porter Writing House
9. Language House
10. University Honors Program

**40. Which living-learning program are you currently participating in?** (Circle one response only.)

1. Beyond the Classroom
2. CIVICUS Program
3. College Park Scholars Program
4. Gemstone Program
5. Global Communities
6. Hinman CEOs Program
7. Honors Humanities Program
8. Jimenez-Porter Writing House
9. Language House
10. University Honors Program

**41. Is there anything else you would like to share about your residence experiences?**

## Appendix E

### National Study of Living-Learning Programs 2003–04 Living-Learning Program Survey NSLLP-LLPS

#### **General Information**

1. Describe the primary purpose of this living-learning program (LLP) in 50 words or less.  
*[Fill-in space here. Cut off responses at 50 words.]*
2. How many students participate in this LLP? *(Please provide a number in the space below.)*  
*[Fill-in space here.]*
3. What is the academic class standing of students who are eligible to participate in this LLP program?  
*(Select one response.)*
  1. First-years/freshmen
  2. First-years and sophomores
  3. Juniors and seniors
  4. Mix of students of all class years
  5. Other (please specify: \_\_\_\_\_)
4. How long are students required to participate in this LLP? *(Select one response.)*
  1. One semester/term only
  2. One year
  3. Two years
  4. Entire undergraduate duration
  5. No required length of time
  6. Other (please specify: \_\_\_\_\_)
5. Where do most of the students in this LLP live? *(Select one response.)*
  1. Participants encompass the entire capacity of one residence hall
  2. Participants live together in a specific reserved portion of one residence hall, and there are other non-LLP students living in this building
  3. Participants live in a self-contained community, but across more than one residence hall
  4. Participants live on campus, but not necessarily in the same residence hall or community
  5. None of the above apply (Please specify the living arrangements for this LLP:  
\_\_\_\_\_)
6. Do some of your participants live off-campus?
  1. Yes
  2. No



7. Is this LLP selective (i.e., there are selection criteria from which you base admission to the program) or open admissions (i.e., everyone who is interested can enroll)? *(Select one response.)*
  1. Selective
  2. Open admissions (Skip to #9)
8. You indicated in a previous response that this LLP is selective. What criteria do you use in order to select among applicants? *(Select all that apply.)*
  1. Standardized test scores (e.g., SAT, ACT, AP scores)
  2. High school GPA
  3. College GPA
  4. High school recommendation (e.g., from teachers, counselors, etc.)
  5. College recommendation (e.g., from professors, advisors, professional staff, etc.)
  6. Prior extra-curricular involvement
  7. Essay written specifically for LLP
  8. Other written material produced by applicant (not necessarily for LLP specifically)
  9. Interview
  10. Major or academic interest area
  11. Class standing (e.g., must be a junior to apply)
  12. Other (please specify: \_\_\_\_\_)

### **Reporting Structure**

9. What is the budget source (i.e., source of funding) for this LLP? *(Select one response.)*
  1. 100% Student Affairs
  2. 100% Academic Affairs
  3. 50% Student Affairs/50% Academic Affairs
  4. More Student Affairs than Academic Affairs
  5. More Academic Affairs than Student Affairs
  6. Other (please specify: \_\_\_\_\_)
10. What unit(s) does this LLP directly report to? *(Select **all** that apply.)*
  1. Office of Residence Life or Student Housing
  2. Other Student Affairs unit (e.g., office of VPSA, Student Activities, etc.)
  3. Academic Department (e.g., History Dept., Chemical Engineering Dept.)
  4. Academic Administrative unit (e.g., Office of Provost, Dean's Office)
  5. Other (please specify: \_\_\_\_\_)
- 11a. What is the primary professional affiliation of this LLP's Director (or chief administrator)? *(Select one response.)*
  1. Office of Residence Life or Student Housing
  2. Other Student Affairs unit (e.g., office of VPSA, Student Activities, etc.)
  3. Academic Department (e.g., History Dept., Chemical Engineering Dept.)
  4. Academic Administrative unit (e.g., Office of Provost, Dean's Office)
  5. Other (please specify: \_\_\_\_\_)

11b. If this LLP has more than one director, what is the primary professional affiliation of the other director? (*Select one response.*)

1. Office of Residence Life or Student Housing
2. Other Student Affairs unit (e.g., office of VPSA, Student Activities, etc.)
3. Academic Department (e.g., History Dept., Chemical Engineering Dept.)
4. Academic Administrative unit (e.g., Office of Provost, Dean's Office)
5. Other (please specify: \_\_\_\_\_)

### **Academic Coursework**

12. What types of courses are offered in conjunction with this LLP?

1. Courses for official academic credit developed and taught by LLP staff

(How many?: \_\_\_\_\_)

2. Special sections of introductory or large classes (e.g., English Composition, Calculus 101, Introductory Psychology) taught by academic departments

(How many?: \_\_\_\_\_)

3. Courses offered by departments or the university-at-large that fill requirements for this LLP (How many?: \_\_\_\_\_)

4. Courses that do not bear academic credit but contain academic content

(How many?: \_\_\_\_\_)

### **Faculty and Staff Roles**

13. Approximately how many faculty play a **direct** role in the functioning of this LLP? (*Select one response.*)

1. None (Skip to #15)
2. 1-5
3. 6-10
4. 11-15
5. 16-20
6. 21 or more

14. What types of roles do **faculty members** at your institution fulfill in this LLP? (*Select all that apply.*)

1. Teach courses for this LLP
2. Serve as academic advisors to participants
3. Serve as mentors to participants
4. Have live-in roles (live in residence hall with LLP participants)
5. Conduct social/cultural outings (e.g., going to live performances, museums, etc.)
6. Conduct special lectures/workshops
7. Facilitate service learning opportunities
8. Run tutoring sessions
9. Perform administrative responsibilities (e.g., program management, selection of participants, budget issues)
10. Other (please specify: \_\_\_\_\_)
11. None of the above

15. What types of roles do **student affairs staff** at your institution fulfill in this LLP? (*Select all that apply.*)
1. Teach courses for this LLP
  2. Serve as academic advisors to participants
  3. Serve as mentors to participants
  4. Have live-in roles (live in residence hall with LLP participants)
  5. Conduct social/cultural outings (e.g., going to live performances, museums, etc.)
  6. Conduct special lectures/workshops
  7. Facilitate service learning opportunities
  8. Run tutoring sessions
  9. Perform administrative responsibilities (e.g., program management, selection of participants, budget issues)
  10. Other (please specify: \_\_\_\_\_)
  11. None of the above
16. What types of roles do **academic affairs staff** at your institution fulfill in this LLP? (*Select all that apply.*)
1. Teach courses for this LLP
  2. Serve as academic advisors to participants
  3. Serve as mentors to participants
  4. Have live-in roles (live in residence hall with LLP participants)
  5. Conduct social/cultural outings (e.g., going to live performances, museums, etc.)
  6. Conduct special lectures/workshops
  7. Facilitate service learning opportunities
  8. Run tutoring sessions
  9. Perform administrative responsibilities (e.g., program management, selection of participants, budget issues)
  10. Other (please specify: \_\_\_\_\_)
  11. None of the above
17. What types of roles do **graduate student employees** at your institution fulfill in this LLP? (*Select all that apply.*)
1. Teach courses for this LLP
  2. Serve as teaching assistants for LLP courses
  3. Serve as academic advisors to participants
  4. Serve as mentors to participants
  5. Have live-in roles (live in residence hall with LLP participants)
  6. Conduct social/cultural outings (e.g., going to live performances, museums, etc.)
  7. Conduct special lectures/workshops
  8. Facilitate service learning opportunities
  9. Run tutoring sessions
  10. Perform administrative responsibilities (e.g., program management, selection of participants, budget issues)
  11. Other (please specify: \_\_\_\_\_)
  12. None of the above
18. What types of roles do **undergraduate student employees** at your institution fulfill in this LLP? (*Select all that apply.*)
1. Teach courses for this LLP
  2. Serve as teaching assistants for LLP courses
  3. Serve as academic advisors to participants
  4. Serve as mentors to participants

5. Have live-in roles (live in residence hall with LLP participants)
6. Conduct social/cultural outings (e.g., going to live performances, museums, etc.)
7. Conduct special lectures/workshops
8. Facilitate service learning opportunities
9. Run tutoring sessions
10. Perform administrative responsibilities (e.g., program management, selection of participants, budget issues)
11. Other (please specify: \_\_\_\_\_)
12. None of the above

### **Activities and Resources**

19. What special resources are available only to participants in this LLP (i.e., not available to students who do not participate in this LLP)? *(Select all that apply.)*

1. Academic advisors in residence hall
2. Classes held in or near residence hall/community
3. Computer labs
4. Counselors in residence hall
5. Faculty offices in residence hall
6. Internship opportunities
7. Residence hall in popular or prime location on campus
8. Scholarships
9. Separate dining facilities
10. Single occupancy rooms
11. Special amenities (e.g., individual bathrooms, complimentary cable TV, etc.)
12. Special residence hall configurations (e.g., suite-style, apartment-style, etc.)
13. Study space
14. Other (please specify: \_\_\_\_\_)
15. None of the above

20. Which of the following, if any, are **required** co-curricular activities in this LLP? *(Select all that apply.)*

1. Academic advising
2. Arts/music performances
3. Capstone experience (e.g., capstone seminar, senior thesis)
4. Career workshops
5. Cultural outings
6. Group projects
7. Internship, field experience, co-op experience, clinical assignment, etc.
8. Intramural or club sports
9. Multicultural programming
10. Outdoor recreation
11. Research project
12. Service learning (i.e., community service done in conjunction with a course)
13. Community service (i.e., not done in conjunction with course)
14. Speaking foreign languages
15. Study abroad
16. Study groups
17. Team/community building activities (e.g., retreats)
18. Other (please specify: \_\_\_\_\_)
19. None of the above

21. Which of the following co-curricular activities are **not required** but nonetheless offered by this LLP? (Select all that apply.)

1. Academic advising
2. Arts/music performances
3. Capstone experience (e.g., capstone seminar, senior thesis)
4. Career workshops
5. Cultural outings
6. Group projects
7. Internship, field experience, co-op experience, clinical assignment, etc.
8. Intramural or club sports
9. Multicultural programming
10. Outdoor recreation
11. Research project
12. Service learning (i.e., community service done in conjunction with a course)
13. Community service (i.e., not done in conjunction with course)
14. Speaking foreign languages
15. Study abroad
16. Study groups
17. Team/community building activities (e.g., retreats)
18. Other (please specify: \_\_\_\_\_)
19. None of the above

22. Which of the following, if any, are awarded upon successful completion of this LLP? (Select all that apply.)

1. Baccalaureate degree conferred by program
2. Transfer directly to specific major (e.g., matriculation into School of Engineering)
3. Completion of major
4. Completion of minor or citation
5. Special certificate
6. None of the above
7. Other (please specify: \_\_\_\_\_)

23. Which **three** academic majors do most participants in this LLP eventually elect? (Select up to three choices.)

Approximate percentage choosing this major:

- |   |                   |
|---|-------------------|
| 1. Arts & Humanities (e.g., English, Music, Foreign Language)                   | [fill-in percent] |
| 2. Social Sciences (e.g., Sociology, Psychology, Economics)                     | [fill-in percent] |
| 3. Business   | [fill-in percent] |
| 4. Health Professions (e.g., nursing, pre-medicine, pre-dental, pre-veterinary) | [fill-in percent] |
| 5. Education  | [fill-in percent] |
| 6. Math, Science, or Engineering  | [fill-in percent] |
| 7. Other pre-professional (e.g., Law, Journalism, Government)                   | [fill-in percent] |
| 8. Mix of majors generally reflective of the student body at this institution   | [fill-in percent] |
| 9. Other (please specify: _____)  | [fill-in percent] |
| 10. Not known   |                   |

## Appendix F

### Correlation Matrix of Variables

Variable	OPENDI	GENDER	AFAM	APA	LATINO	WHITE	MULTI	SATACT
Openness to Diversity	1.00							
Gender	.11 ***	1.00						
African American/Black	.08 ***	-.01	1.00					
Asian Pacific American	.04 *	-.03	-.06 **	1.00				
Hispanic/Latino	.07 ***	-.01	-.03	-.06 **	1.00			
White/Caucasian	-.10 ***	.05 *	-.38 ***	-.71 ***	-.35 ***	1.00		
Multi-racial or multi-ethnic	.01	-.05 *	-.03	-.05 **	-.03	-.32 ***	1.00	
Composite ACT + SAT	-.14 ***	-.18 ***	-.18 ***	.04	-.07 ***	.07 ***	.01	1.00
Pre-test scale: imp of div act	.32 ***	.09 ***	.10 ***	.09 ***	.05 **	-.15 ***	.04	-.13 ***
Scale: Positive diversity climate	.16 ***	.04 *	-.01	-.03	-.02	.03	.02	-.02
Scale: Residence hall is academically supportive	.18 ***	.03	.02	-.02	-.08 ***	.04 *	-.01	.07 ***
Scale: Residence hall is socially supportive	.23 ***	.01	-.02	.01	-.06 **	.01	.04 *	.06 **
Time spent studying	.05 *	.09 ***	-.03	.02	-.01	.02	-.04 *	.09 ***
Soft pure	.07 ***	.05 *	-.02	-.02	.01	.01	.04 *	.04 *
Soft applied	.09 ***	.08 ***	.01	-.06 **	.01	.04 *	.00	-.17 ***
Hard applied	-.11 ***	-.12 ***	.01	.01	-.04	.02	-.05 *	.04 *
First-Year	-.11 ***	.02	.04 *	-.01	.01	-.02	.01	-.18 ***
Sophomore	.01	.00	-.06 **	.00	.00	.04 *	-.04 *	.08 ***
Junior	.09 ***	-.02	.02	-.01	.00	.00	.01	.09 ***
Scale: Course faculty interaction	.17 ***	.01	.01	-.02	.03	.00	.00	-.07 **
Scale: Faculty mentorship	.18 ***	-.01	.01	-.02	.03	-.01	.02	.04
Involvement in varsity sports	-.02	.02	.01	-.03	-.02	.01	.06 **	-.02
Involvement in fraternity/sorority	.02	-.01	-.01	-.04 *	.02	.03	-.01	-.07 ***
Involvement in ethnic clubs	.19 ***	.02	.12 ***	.18 ***	.13 ***	-.26 ***	.04 *	-.01

Variable	OPENDI		GENDER		AFAM		APA		LATINO		WHITE		MULTI		SATACT	
Scale: Pos peer div interactions	.27	***	.03		.12	***	.22	***	.12	***	-.32	***	.11	***	.05	*
Scale: Disc academic issues with peers	.24	***	.04	*	-.06	**	-.09	***	-.05	**	.11	***	.05	*	.10	***
Scale: Disc socio issues with peers	.34	***	-.05	*	-.01		-.06	**	-.02		.03		.07	***	.14	***
Number of students in LLP	-.04	*	-.02		-.03		-.03		-.04	*	.07	***	-.06	**	.11	***
Academic class of students in LLP	-.01		.04	*	-.05	**	-.07	***	-.04	*	.11	***	-.02		.02	
Where students live	-.03		-.05	*	.02		.17	***	.02		-.16	***	.01		.20	***
Is LLP selective	.00		.04	*	-.02		-.02		-.03		.04	*	-.01		-.20	***
Role: Mentors	.03		.00		.00		-.05	*	.02		.04		-.03		.00	
Role: Live in residence hall	.02		.00		.02		-.03		-.01		.02		.01		-.06	**
Role: Conduct cultural outings	.01		.02		.05	*	-.06	**	.05	*	.01		-.01		-.03	
Role: Conduct special lectures	-.03		.00		-.01		-.02		.00		.00		.05	**	.02	
# of courses in LLP	.01		-.01		.01		-.03		.04	*	.00		-.02		.05	*
# of faculty in LLP	.00		-.01		.02		.01		.02		-.01		-.03		.11	***
LLP act: Cultural outings	.03		-.01		.04	*	.01		.06	**	-.05	**	.02		-.08	***
LLP act: Group projects	-.02		-.04	*	.03		-.01		-.01		-.01		.02		-.03	
LLP act: Multic prog	.05	**	-.02		.07	***	-.01		.09	***	-.08	***	.03		-.10	***
LLP act: Service learn	-.01		-.06	**	-.01		.01		-.01		.01		-.01		.02	
LLP act: Community service	.07	**	-.02		.05	**	.02		.12	***	-.10	***	.03		-.06	**
LLP act: Study groups	-.01		-.05	*	.03		.04	*	-.01		-.05	**	.04		-.01	
LLP act: Team bldg act	.01		-.04	*	.06	**	-.03		.00		-.01		.01		-.05	**
Scale: Critical thinking abilities	.19	***	-.16	***	-.01		-.08	***	-.03		.07	***	.03		.29	***
Scale: Sense of civic engagement	.33	***	.16	***	.00		-.06	**	-.01		.06	**	.00		.01	
Scale: Sense of civic empowerment	.26	***	.06	**	-.03		-.14	***	-.02		.12	***	.02		.08	***

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

### Correlation Matrix of Variables (continued)

Variable	PTDIVA	POSDIV	RHACAD	RHSOC	TIMEST	SOFTPU	SOFTAP	HARDAP
Openness to Diversity								
Gender								
African American/Black								
Asian Pacific American								
Hispanic/Latino								
White/Caucasian								
Multi-racial or multi-ethnic								
Composite ACT + SAT								
Pre-test scale: imp of div act	1.00							
Scale: Positive diversity climate	.13 ***	1.00						
Scale: Residence hall is academically supportive	.10 ***	.24 ***	1.00					
Scale: Residence hall is socially supportive	.13 ***	.37 ***	.66 ***	1.00				
Time spent studying	.03	.00	.07 ***	.04 *	1.00			
Soft pure	.08 ***	.05 *	-.02	.04	-.02	1.00		
Soft applied	.03	-.04 *	-.06 **	-.04 *	-.12 ***	-.32 ***	1.00	
Hard applied	-.08 ***	.00	.04 *	.00	.08 ***	-.35 ***	-.58 ***	1.00
First-Year	.09 ***	.02	.02	.03	-.11 ***	-.04	.03	.00
Sophomore	-.03	.00	.00	-.01	.06 **	-.01	-.02	.03
Junior	-.07 ***	-.02	-.02	-.03	.04 *	.01	-.03	.01
Scale: Course faculty interaction	.12 ***	.05 *	.05 *	.06 **	.21 ***	.06 **	.02	-.06 **
Scale: Faculty mentorship	.10 ***	.04 *	.09 ***	.08 ***	.16 ***	.13 ***	-.07 ***	-.06 **
Involvement in varsity sports	.04 *	.04	.05 *	.05 *	-.01	-.02	-.03	.03
Involvement in fraternity/sorority	-.01	-.04	-.02	-.02	-.04 *	-.07 ***	.14 ***	-.05 *
Involvement in ethnic clubs	.22 ***	-.02	.02	.01	.07 ***	.06 **	.00	-.04 *
Scale: Pos peer div interactions	.24 ***	.29 ***	.11 ***	.21 ***	.01	.08 ***	.00	-.10 ***
Scale: Disc academic issues with peers	.10 ***	.12 ***	.11 ***	.14 ***	.14 ***	.05 *	-.02	-.03



Variable	PTDIVA		POSDIV		RHACAD		RHSOC		TIMEST		SOFTPU		SOFTAP		HARDAP	
Scale: Disc socio issues with peers	.23	***	.11	***	.12	***	.17	***	.08	***	.14	***	-.02		-.09	***
Number of students in LLP	-.04	*	-.05	**	.00		-.02		.00		.01		.05	*	-.06	**
Academic class of students in LLP	-.08	***	-.04	*	.01		-.04	*	.04	*	.01		.00		.01	
Where students live	.00		.08	***	-.03		-.01		-.02		.03		-.05	**	-.02	
Is LLP selective	.06	**	.00		-.06	**	-.08	***	-.01		-.07	***	.10	***	.03	
Role: Mentors	-.02		.02		-.05	**	-.05	*	-.04	*	-.01		.09	***	-.07	***
Role: Live in residence hall	.05	*	.02		-.02		.05	*	-.06	**	.00		.05	**	-.02	
Role: Conduct cultural outings	.01		.03		.01		.01		-.15	***	.01		.15	***	-.08	***
Role: Conduct special lectures	.01		.07	***	-.01		.03		-.05	**	.06	**	-.02		-.03	
# of courses in LLP	-.02		-.01		.06	**	.06	**	-.06	**	-.04	*	.07	**	.01	
# of faculty in LLP	.00		.02		.04	*	.08	***	-.06	**	.01		.05	*	.00	
LLP act: Cultural outings	.01		-.03		.01		.00		.00		.08	***	-.01		-.10	***
LLP act: Group projects	-.01		-.01		.01		.02		-.03		.05	**	.01		-.04	*
LLP act: Multic prog	.02		-.03		-.03		-.02		-.02		.00		.07	***	-.09	***
LLP act: Service learn	.05	*	.05	*	-.01		.01		.01		-.03		-.04	*	.07	***
LLP act: Community service	.05	*	.00		-.02		.01		.01		.01		.06	**	-.08	***
LLP act: Study groups	.00		-.02		.00		.02		.01		.01		.01		-.01	
LLP act: Team bldg act	.04	*	-.04	*	-.05	**	-.04	*	.00		.00		.06	**	-.02	
Scale: Critical thinking abilities	.14	***	.08	***	.03		.07	***	.06	**	.15	***	-.04	*	-.08	***
Scale: Sense of civic engagement	.21	***	.12	***	.20	***	.19	***	.16	***	.03		.04	*	-.06	**
Scale: Sense of civic empowerment	.20	***	.18	***	.20	***	.20	***	.09	***	.06	**	.00		-.03	

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

### Correlation Matrix of Variables (continued)

Variable	FIRSTY		SOPH		JUNIOR		CRSEFA		MENTFA		INVATH		INVGRE		INVETH	
Openness to Diversity																
Gender																
African American/Black																
Asian Pacific American																
Hispanic/Latino																
White/Caucasian																
Multi-racial or multi-ethnic																
Composite ACT + SAT																
Pre-test scale: imp of div act																
Scale: Positive diversity climate																
Scale: Residence hall is academically supportive																
Scale: Residence hall is socially supportive																
Time spent studying																
Soft pure																
Soft applied																
Hard applied																
First-Year	1.00															
Sophomore	-.64	***	1.00													
Junior	-.45	***	-.22	***	1.00											
Scale: Course faculty interaction	-.06	**	.00		.05	*	1.00									
Scale: Faculty mentorship	-.11	***	-.04	*	.12	***	.49	***	1.00							
Involvement in varsity sports	.05	*	-.03		-.03		.03		.03		1.00					
Involvement in fraternity/sorority	.09	***	-.03		-.05	*	.03		.02		.02		1.00			
Involvement in ethnic clubs	-.10	***	.05	*	.04	*	.12	***	.11	***	.01		.00		1.00	
Scale: Pos peer div interactions	-.06	**	-.03		.06	**	.12	***	.12	***	.03		.00		.25	***
Scale: Disc academic issues with peers	-.11	***	.02		.07	***	.27	***	.21	***	.00		.02		.03	

Variable	FIRSTY		SOPH		JUNIOR		CRSEFA		MENTFA		INVATH		INVGRE		INVETH	
Scale: Disc socio issues with peers	-.06	**	.02		.04		.24	***	.23	***	.00		-.03		.17	***
Number of students in LLP	-.05	*	.06	**	-.02		.00		.00		.00		-.03		-.02	
Academic class of students in LLP	-.31	***	.19	***	.15	***	.04	*	.04	*	-.01		-.04	*	-.02	
Where students live	-.02		-.03		.04	*	-.02		.01		-.01		.00		-.01	
Is LLP selective	.15	***	-.05	**	-.08	***	-.01		.06	**	.04	*	.07	***	.02	
Role: Mentors	-.04	*	.02		.02		-.02		.02		-.06	**	.01		-.04	*
Role: Live in residence hall	.14	***	-.07	***	-.08	***	-.02		.03		-.03		.00		-.03	
Role: Conduct cultural outings	.10	***	-.03		-.08	***	-.01		.03		-.04		.07	***	-.01	
Role: Conduct special lectures	.11	***	-.06	**	-.06	**	-.02		.00		.00		-.02		.01	
# of courses in LLP	-.02		.04	*	-.01		-.03		.01		-.05	**	-.01		.05	**
# of faculty in LLP	-.03		.07	***	-.06	**	-.01		.00		-.02		-.03		.03	
LLP act: Cultural outings	.05	**	-.05	*	-.03		.05	*	.06	**	.02		.02		.09	***
LLP act: Group projects	.03		-.03		-.02		-.02		.02		.01		-.01		.01	
LLP act: Multic prog	.05	**	-.04	*	-.04		.05	*	.07	***	.04	*	.04		.08	***
LLP act: Service learn	.05	*	-.03		-.02		-.05	**	.02		-.01		-.01		.00	
LLP act: Community service	.01		.00		-.02		.08	***	.09	***	.02		.03		.12	***
LLP act: Study groups	.02		-.02		-.03		.01		.00		.03		.01		.03	
LLP act: Team bldg act	.05	*	-.03		-.03		.05	*	.02		.08	***	.01		.05	*
Scale: Critical thinking abilities	-.11	***	.03		.05	*	.16	***	.18	***	-.02		.00		.12	***
Scale: Sense of civic engagement	-.06	**	-.01		.06	**	.23	***	.21	***	.03		.08	***	.17	***
Scale: Sense of civic empowerment	-.03		.00		.03		.14	***	.13	***	.02		.03		.12	***

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

### Correlation Matrix of Variables (continued)

Variable	POSDIV	ACADPE	SOCPEE	NUMSTU	CLASST	WHEREL	LLPSEL	ROLEME
Openness to Diversity								
Gender								
African American/Black								
Asian Pacific American								
Hispanic/Latino								
White/Caucasian								
Multi-racial or multi-ethnic								
Composite ACT + SAT								
Pre-test scale: imp of div act								
Scale: Positive diversity climate								
Scale: Residence hall is academically supportive								
Scale: Residence hall is socially supportive								
Time spent studying								
Soft pure								
Soft applied								
Hard applied								
First-Year								
Sophomore								
Junior								
Scale: Course faculty interaction								
Scale: Faculty mentorship								
Involvement in varsity sports								
Involvement in fraternity/sorority								
Involvement in ethnic clubs								
Scale: Pos peer div interactions	1.00							
Scale: Disc academic issues with peers	.23	***	1.00					

Variable	POSDIV	ACADPE	SOCPEE	NUMSTU	CLASST	WHERELE	LLPSEL	ROLEME
Scale: Disc socio issues with peers	.35 ***	.57 ***	1.00					
Number of students in LLP	-.05 *	.02	.04 *	1.00				
Academic class of students in LLP	-.10 ***	.03	-.02	.18 ***	1.00			
Where students live	.15 ***	-.02	.00	-.17 ***	-.04 *	1.00		
Is LLP selective	-.04 *	-.05 *	-.04 *	.04 *	-.04 *	-.03	1.00	
Role: Mentors	-.01	-.04 *	-.01	-.16 ***	-.10 ***	.24 ***	-.23 ***	1.00
Role: Live in residence hall	-.01	-.04 *	-.02	-.15 ***	-.39 ***	.08 ***	-.19 ***	.60 ***
Role: Conduct cultural outings	-.02	-.07 ***	-.03	-.06 **	-.32 ***	.12 ***	-.13 ***	.51 ***
Role: Conduct special lectures	-.01	-.08 ***	-.02	-.31 ***	-.24 ***	.23 ***	-.22 ***	.44 ***
# of courses in LLP	-.04 *	-.03	.00	.09 ***	-.03	-.13 ***	-.07 **	-.11 ***
# of faculty in LLP	-.01	-.02	.04 *	.46 ***	.05 **	.11 ***	-.18 ***	.17 ***
LLP act: Cultural outings	.00	.00	.04 *	-.13 ***	-.10 ***	-.03	-.10 ***	-.01
LLP act: Group projects	-.03	-.06 **	-.01	-.10 ***	-.12 ***	-.04 *	-.08 ***	.02
LLP act: Multic prog	.05 *	-.02	.00	-.13 ***	-.12 ***	-.02	-.08 ***	-.05 **
LLP act: Service learn	-.03	-.02	-.02	-.03	-.10 ***	.01	-.04 *	-.04 *
LLP act: Community service	.10 ***	.03	.07 ***	-.11 ***	-.13 ***	.01	-.12 ***	-.11 ***
LLP act: Study groups	.03	.01	.04 *	-.05 *	-.07 ***	-.05 *	-.05 *	-.04 *
LLP act: Team bldg act	.01	.00	.01	-.16 ***	-.12 ***	-.07 ***	-.07 ***	-.13 ***
Scale: Critical thinking abilities	.18 ***	.25 ***	.44 ***	.08 ***	.01	.03	-.09 ***	.01
Scale: Sense of civic engagement	.18 ***	.27 ***	.26 ***	-.02	-.03	-.04 *	.02	.01
Scale: Sense of civic empowerment	.16 ***	.26 ***	.27 ***	.00	-.02	-.01	.00	.00

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

### Correlation Matrix of Variables (continued)

Variable	ROLELI	ROLESO	ROLELE	NUMCOU	NUMFAC	ACTCUL	ACTGRO	ACTMUL
Openness to Diversity								
Gender								
African American/Black								
Asian Pacific American								
Hispanic/Latino								
White/Caucasian								
Multi-racial or multi-ethnic								
Composite ACT + SAT								
Pre-test scale: imp of div act								
Scale: Positive diversity climate								
Scale: Residence hall is academically supportive								
Scale: Residence hall is socially supportive								
Time spent studying								
Soft pure								
Soft applied								
Hard applied								
First-Year								
Sophomore								
Junior								
Scale: Course faculty interaction								
Scale: Faculty mentorship								
Involvement in varsity sports								
Involvement in fraternity/sorority								
Involvement in ethnic clubs								
Scale: Pos peer div interactions								

Variable	ROLELI	ROLESO	ROLELE	NUMCOU	NUMFAC	ACTCUL	ACTGRO	ACTMUL
Scale: Disc academic issues with peers								
Scale: Disc socio issues with peers								
Number of students in LLP								
Academic class of students in LLP								
Where students live								
Is LLP selective								
Role: Mentors								
Role: Live in residence hall	1.00							
Role: Conduct cultural outings	.54 ***	1.00						
Role: Conduct special lectures	.43 ***	.47 ***	1.00					
# of courses in LLP	-.04 *	.03	-.14 ***	1.00				
# of faculty in LLP	.06 **	.26 ***	.10 ***	.26 ***	1.00			
LLP act: Cultural outings	.06 **	.03	-.03	.25 ***	.00	1.00		
LLP act: Group projects	.11 ***	.05 **	.08 ***	.26 ***	.02	.29 ***	1.00	
LLP act: Multic prog	.01	-.02	-.13 ***	.25 ***	-.04 *	.61 ***	.33 ***	1.00
LLP act: Service learn	.14 ***	-.03	.06 **	-.03	-.02	-.01	.37 ***	-.01
LLP act: Community service	-.07 ***	-.09 ***	-.16 ***	.11 ***	-.05 *	.56 ***	.19 ***	.73 ***
LLP act: Study groups	.05 *	-.04	-.01	-.02	-.01	.21 ***	.26 ***	.20 ***
LLP act: Team bldg act	-.08 ***	.08 ***	-.05 **	-.06 **	-.12 ***	.32 ***	.15 ***	.53 ***
Scale: Critical thinking abilities	-.03	-.01	.04 *	.01	.08 ***	.01	.04 *	.00
Scale: Sense of civic engagement	.02	.01	-.02	-.03	-.04 *	.02	.00	.05 *
Scale: Sense of civic empowerment	.01	.01	.00	-.02	.00	-.01	-.02	-.01

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

### Correlation Matrix of Variables (continued)

Variable	ACTSER	ACTCOM	ACTSTU	ACTTEA	CRITAB	CIVENG	CIVEMP
Openness to Diversity							
Gender							
African American/Black							
Asian Pacific American							
Hispanic/Latino							
White/Caucasian							
Multi-racial or multi-ethnic							
Composite ACT + SAT							
Pre-test scale: imp of div act							
Scale: Positive diversity climate							
Scale: Residence hall is academically supportive							
Scale: Residence hall is socially supportive							
Time spent studying							
Soft pure							
Soft applied							
Hard applied							
First-Year							
Sophomore							
Junior							
Scale: Course faculty interaction							
Scale: Faculty mentorship							
Involvement in varsity sports							
Involvement in fraternity/sorority							
Involvement in ethnic clubs							
Scale: Pos peer div interactions							
Scale: Disc academic issues with peers							



Variable	ACTSER	ACTCOM	ACTSTU	ACTTEA	CRITAB	CIVENG	CIVEMP
Scale: Disc socio issues with peers							
Number of students in LLP							
Academic class of students in LLP							
Where students live							
Is LLP selective							
Role: Mentors							
Role: Live in residence hall							
Role: Conduct cultural outings							
Role: Conduct special lectures							
# of courses in LLP							
# of faculty in LLP							
LLP act: Cultural outings							
LLP act: Group projects							
LLP act: Multic prog							
LLP act: Service learn	1.00						
LLP act: Community service	-.01	1.00					
LLP act: Study groups	.00	.20	***	1.00			
LLP act: Team bldg act	-.01	.49	***	.18	***	1.00	
Scale: Critical thinking abilities	.04	*	.04	*	.01	.03	1.00
Scale: Sense of civic engagement	.01	.08	***	.02	.03	.21	***
Scale: Sense of civic empowerment	.03	.03		.01	-.01	.28	***

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

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